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ENVIRONMENTAL HEALTH PLANNING GUIDE. AIR POLLUTION, SEWERAGE, WATER, HOUSING, REFUSE

Public Health Service
Washington, D. C.

1973

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Planning Guide

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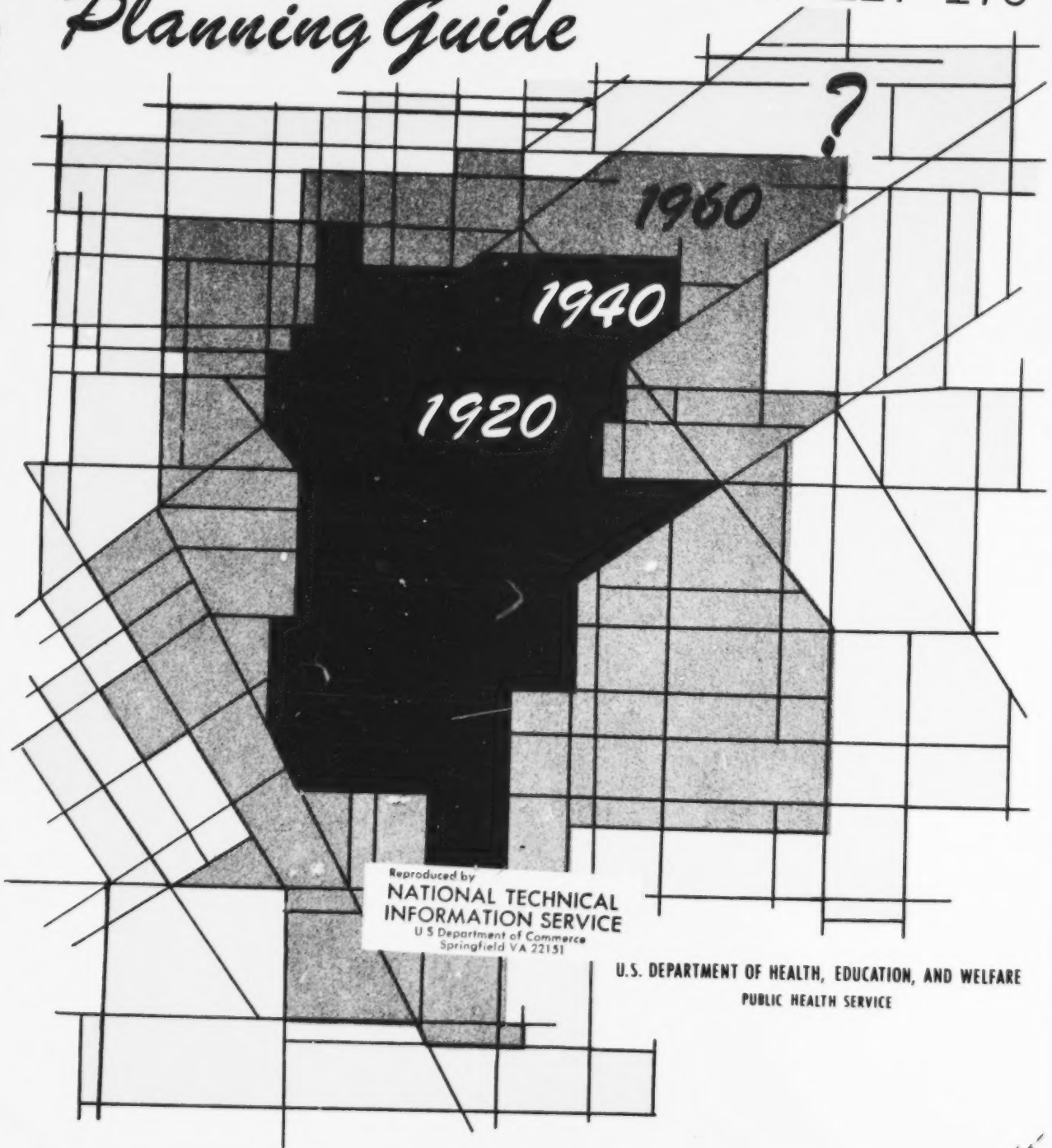

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

65

ENVIRONMENTAL HEALTH PLANNING GUIDE

AIR POLLUTION
SEWERAGE
WATER
HOUSING
REFUSE

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Division of Engineering Services
Wash. 25, D.C.

I

PUBLIC HEALTH SERVICE PUBLICATION NO. 823

II

PREFACE

Health in communities depends, to a large extent, on adequate environmental sanitation. The rapid population growth in urban areas is compelling many communities to realize that plans are needed for correcting current deficiencies and preventing future problems from arising.

Just as an adequate comprehensive community plan must take environmental health factors into consideration, so also must plans for a more healthful environment be judged in the light of overall needs and desires.

This guide is designed to assist in evaluating health related services and facilities from a planning standpoint; its use should provide the community with a better view of the factors contributing to a healthful environment, now and in the future.

Wesley E. Gilbertson, Chief
Division of Engineering Services

ACKNOWLEDGEMENTS

A number of field studies[1] were conducted during the preparation of this evaluation guide. We are grateful for the assistance of the many State and local health, planning and public works officials who participated in these field trials during refinement of the manual.

Two ad hoc conferences were also held, during which the participants reviewed and advised on guide objectives and procedures, and assisted materially in formulation of the guide.

Finally, full-scale community testing was carried out in Lake County, Illinois, Albuquerque, New Mexico, Fort Wayne—Allen County, Indiana and Omaha—Douglas County, Nebraska.

The assistance of officials in these communities and of all those who contributed to guide preparation is acknowledged.

The basic responsibility for guide content was assumed by Sr. Sanitary Engr. Warren F. Smith and field testing was primarily conducted by Sr. Sanitary Engr. (R) Norman E. Tucker, both under the guidance of Sanitary Engineer Director Arthur H. Neill; Chief, Technical Services Section.

Malcolm C. Hope, Chief
General Engineering Program
Division of Engineering Services

[1] There areas were:

Boyd County, Kentucky
Cabell County, West Virginia
DuPage County, Illinois
Fairfax County, Virginia
Lawrence County, Ohio
Marion County, Indiana
Montgomery County, Maryland
Nassau County, New York
Tulsa County, Oklahoma
Wayne County, West Virginia

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INTRODUCTION

"With the increasing tendency of our people to prefer the urban to the rural life and the consequent centralization of our population, the problem of the city has become a great American question.

The rapid congestion of population in very limited areas presents difficulties, social, moral, economic and political, which demand the most careful attention and press for the wisest solution."

This statement might well have been clipped from today's newspaper, but the truth is that people were reading it over half a century ago in *The American City* Magazine of September 1909.

Today the explosive population growth and the continued concentration of people, production and services in metropolitan areas are making our environmental health problems still more complex and difficult. Over four-fifths of our population growth is concentrated in 210 metropolitan areas and the suburbs are growing six times as fast as the central cities. Cities, towns, and suburbs now blend into an almost continuous "metropolitan area". Polluted water and air, open refuse dumps, substandard housing and overflowing septic tanks are now among the most urgent community problems.

There are no standard answers to a community's problems. The solutions will vary depending on local conditions. This guide, however, presents a systematic approach to a community's environmental health problems by describing the steps and procedures that have been found helpful in determining a community's needs.

The guide emphasizes the evaluation of health-related utilities and services which readily lend themselves to long-range planning, and deals primarily with water, sewerage, refuse, air pollution and housing programs. Health department inspectional services are covered only in the organizational sense, and reference is made to existing rating schedules for several of these vital services.

The procedures described in this guide can be applied to an area as small as a town or as large as a metropolitan area, and are particularly suited for use in a county with several incorporated places and operating agencies.

Planning for the community's environmental health future can be based on study results. Plans should allow a systematic and coordinated approach, in which community economic ability is balanced against the most pressing needs. The survey results may be used to stimulate public interest in the community's health problems and to aid in better coordination of health planning as an important aspect of comprehensive urban planning procedures.

CONSULTATION SERVICES: Within the limits of available consultant personnel, the Public Health Service will provide assistance in the organization of local studies where State and local counterpart personnel are made available.

Ordinarily, such services will consist of (a) orientation in study concepts (b) explanation of data collection procedures, and (c) assistance in the evaluation and recommendation phases after the data collection is completed.

Requests for consultative service should be directed to U.S. Department of Health, Education, and Welfare Regional Offices (See inside rear cover), through the State Health Department.

CHAPTER I

PREPARING FOR THE STUDY

STUDY SPONSORING AGENCY

When an evaluation study is considered by a community, one of the first questions is, "Who should be responsible for conducting the study"? The best answer is that every agency with an interest or responsibility in a more healthful living environment should participate. It is impossible to pin-point responsibility in this broad area which includes so many facets important to the entire community. Where widespread community interest exists, the question of sponsorship can often be solved by arranging with a lay civic association or a group of such civic associations to assume formal sponsorship, with assistance from the public agencies involved.

In many respects, this is the most preferred procedure because it overcomes any inter-agency differences and since many surveys result in recommendations requiring public support, it is desirable to enlist public interest from the beginning.

Regardless of the official study sponsor, a number of governmental agencies will be closely involved. These include the health department, the public works department, the planning agency, the legal department and often officials of other public agencies.

Finally, the elected or appointed heads of the governmental entities included in the study should be involved and should authorize the survey activities.

A basic point in the evaluation proceedings proposed in the manual is that the activities and findings in no way *supplant* the programs carried on by regularly acting agencies in their areas of responsibility. Instead, the studies should supplement their activities by promoting a broad co-ordinated view of environmental factors important to many diverse groups in the community.

FINANCING THE STUDY

Another important question is that of the money, material and man-power which may be needed. Experience has shown that this is largely dependent on what the community wants from the studies. Almost all of the information asked for will be available in the area; the work consists of collecting and summarizing it for evaluation. Material needs consist of about a dozen basic maps, most of which can be easily prepared from existing data. Transparent overlays are desirable but not essential. Time-wise, surveys for moderately extensive metropolitan areas have been conducted in a few weeks where procedures were well organized.

The major expense incurred will be that of preparing a final report for distribution, and this can be anything from a few mimeographed pages to a large multi-colored publication, depending on the financial capabilities and the distribution objectives of the sponsors.

Federal matching grant financial assistance may be available through the Housing and Home Finance agencies' Urban Renewal Administration, Urban Planning Assistance Program for some aspects of the studies and information on this possibility can be obtained from the HHFA Regional Director by the local planning agency.

BASIC STUDY NEEDS

Before undertaking the completion of specific study questions, several maps and charts should be prepared which are applicable to all portions of the survey proceedings. These are:

1. Area map: One standard map size should be adopted and at least a dozen copies should be obtained. While an existing map can be used, it has been found much easier to prepare a base map showing only the study area boundaries and the outlines and names of the major governmental units in the survey area. Miscellaneous information such as street and highway locations, township or section lines, etc. often confuse the data shown in this study and should be deleted, if possible.

   Area maps should be of such a scale as to promote ease of showing data and presenting it at meetings. When the study has reached the report preparation stage, map size can be reduced as needed. A typical area map (reduced size) is shown on page 50.

2. Population Density Maps and Population Data:

Two population density maps will be needed; one showing present densities and the other showing projected future densities. (See pages 52 and 53). This data should be superimposed on two of the area maps and should group densities into four categories as follows:

(Use for maps) *Population Density*	(For information only) *Equivalent Lot Size*
Over 5,000 persons per square mile	Less than $\frac{1}{2}$ acre
2,500 to 5,000 persons per square mile	$\frac{1}{2}$ to 1 acre
1,000 to 2500 persons per square mile	1 to 2 acres
Less than 1000 persons per square mile	Over 2 acres

In computing population densities, geographic units should be small enough to indicate significant population concentrations. Too large an area may obscure the local population densities and units as small as one square mile are usually desirable. In communities having official planning agencies, the information needed for these maps is usually available or can be readily obtained by the planning group for map preparation.

Where there is no community planning agency and where population data is not available, other data sources should be explored. U.S. Bureau of the Census information can be used for past figures and local Chambers of Commerce often have data on current estimates. Public utility companies, school board records, real estate groups and similar sources may have useful data for population estimates.

Population forecasting should extend at least 10 years into the future and preferably should also be made for longer periods. Professional guidance is often desirable for making population projections since this is a difficult task. A recommended discussion of the subject is given in "*Population Projections for Local Areas*" by M. Zitter in Public Works, June, 1957.

3. Drainage and Soil Maps:

A determination is needed of the major drainage basins of the area under study, and it is helpful to have soil characteristics also shown on this map.

Topographic maps for use in preparing drainage maps can be obtained for almost all communities from the U.S. Geological Survey, Washington 25, D.C., if not already available locally. By tracing stream and ridge lines the major drainage basins can be identified.

Soil characteristics provide helpful information where this data is available. For ease of preparation it is usually sufficient to show only three broad classifications; usually per-

meable and well drained, not usually permeable or well drained, and poor permeability and drainage. Local offices of the U. S. Department of Agriculture often can supply soil maps which are adaptable for study purposes. A typical reduced size drainage and soil map is shown on page 51.

4. Governmental Background:

Information on the type, powers and functions of each governmental unit within the study area should be obtained.

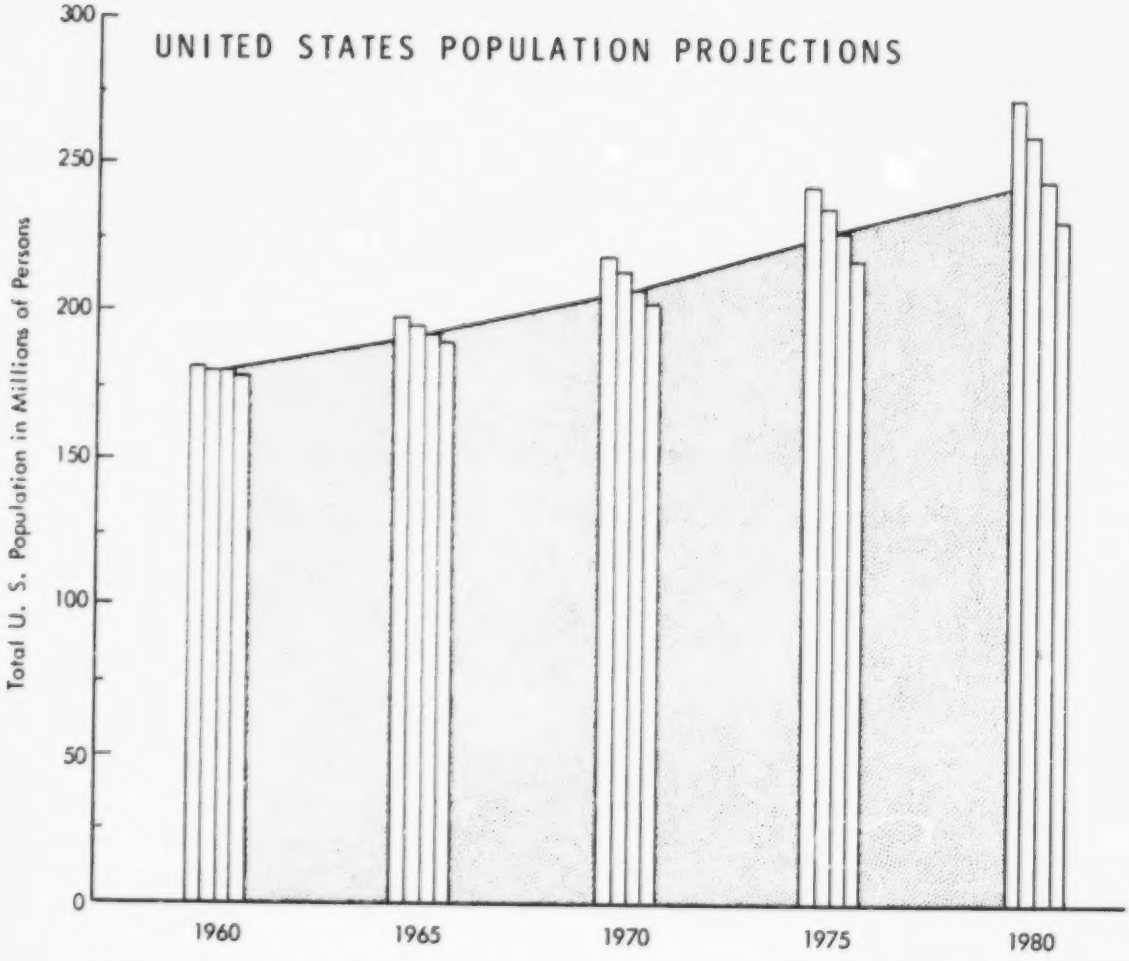
If not readily available from local officials, this information can be found in the State Statutes. In preparing the information, charts similar to the one shown below may be useful. It should be noted that all statutory powers are not necessarily used, as would be the case where a town chose to purchase water from a private water company or another city instead of operating a municipal plant.

In connection with the gathering of this information, a copy of any ordinances or regulations pertaining to the listed functions will be useful in later considerations and should be obtained for reference.

GOVERNMENTAL BACKGROUND SUMMARY

Name	Form	Activities									
		Health Department	Sewage Collection	Sewage Treatment	Water Supply	Refuse Collection & Disposal	Air Pollution Control	Housing Agency	Zoning	Subdivision Regulations	Planning Agency
River County	Bd. of Supervisors	yes	-	-	-	-	-	yes	-	-	-
City of Riverville	City Manager	-	yes	yes	yes	yes	-	-	yes	yes	yes
Town of Bethel	Mayor-Council	-	yes	yes	yes	yes	-	-	yes	-	-
Town of Waterton	Mayor-Council	-	-	-	yes	-	-	-	-	-	-
Town of Creston	Mayor-Council	-	yes	yes	yes	-	-	-	yes	yes	-
Town of Higby	Mayor-Council	-	yes	yes	yes	yes	-	-	-	-	-
Town of Fairview	Mayor-Council	-	-	-	-	-	-	-	-	-	-

If agency is not empowered to carry out the activity use "no". If agency is empowered to carry out the activity but does not, enter a dash. If agency carries out the activity, use "yes".



Source: Bureau of Census Population Estimates, November, 1958.
Projections were made using four different fertility level assumptions. See full text for detailed explanation. (The shaded area represents an average of the individual projection series figures.)

CHAPTER II
COLLECTING THE DATA

Having obtained the general basic data, detailed information on programs related to environmental health can be undertaken. The information needed to evaluate the various services and operations is asked for in a series of forms under each subject. One set of forms should be filled out for each agency carrying out a particular function in the study area. For example, if there are four separate sewerage agencies, data is to be obtained for each one on a separate set of forms.

A. SANITATION SERVICES

No attempt is made to "rate" the services in this category, but a number of sanitation programs are listed primarily to point out any programs which may be duplicated or those which may be lacking in the community.

It is not suggested that every community should necessarily conduct all the programs listed, but their value should be considered in connection with a study of environmental health. Where the community wishes to evaluate the effectiveness of specific programs, special rating methods are available. Examples of these are the Public Health Service compliance rating schedules for milk control programs and for eating and drinking establishment programs.

The American Public Health Association also has prepared evaluation methods for many facets of sanitation and organization of public health operations, the *Evaluation Schedule* and also the *Guide to A Community Health Study.*

A listing such as shown below may be helpful in obtaining a picture of the services offered, and such a list should be prepared for each public health agency operating in the study area.

1. Health Department River County

2. Active Sanitation Programs

	Conducted By:
Accident prevention	no –
Air Pollution	yes County
Camp and park sanitation	no –
Child care homes	no –
Eating, drinking establishments	yes County
Food processing plants	yes "
Frozen dairy products	yes "
General sanitation complaints	yes "
Grocery stores	yes "
Hospitals	yes State Health Dept.
Hotels, motels	yes County
Housing	yes "
Ice manufacturing	no
Industrial hygiene	no
Meat inspection	yes County
Milk inspection	yes "
Mobile home parks	yes "
Nursing homes	yes "
On-lot sewage disposal	yes "
On-lot water supplies	yes "
Plumbing inspection	no
Poultry inspection	no
Radiological health	yes State Health Dept.
Refuse collection, disposal	yes County
Rodent control	yes "
Schools	yes School Nurses
Shellfish inspection	no
Swimming pool sanitation	yes County
Vector control	yes "

B. HEALTH AGENCY OPERATIONS

This section is designed to obtain general information on the staffing, financing, organization and certain regulations of the health agency. Sample data reporting forms are shown for each program analyzed. These forms, as well as all others in this publication, may be reproduced as needed by the study group, without permission. The program data forms are followed by suggested summary charts for ease in subsequent evaluation. Following the summary charts, evaluation guides are given under each subject heading. These guides are based on the experience of local, state and Public Health Service sanitary engineers and sanitarians and also from published and unpublished research material. They are necessarily broad and should be considered as goals of good practice.

After the data has been collected and summarized, the evaluation guides may be used in determining how well the local situations meets these criteria. Any deficiencies which appear should be noted as preliminary conclusions of the study and will be given further consideration later.

1. Health Department (use one set of sheets for each health department)

River County

2. Area covered River County Population served 180,000

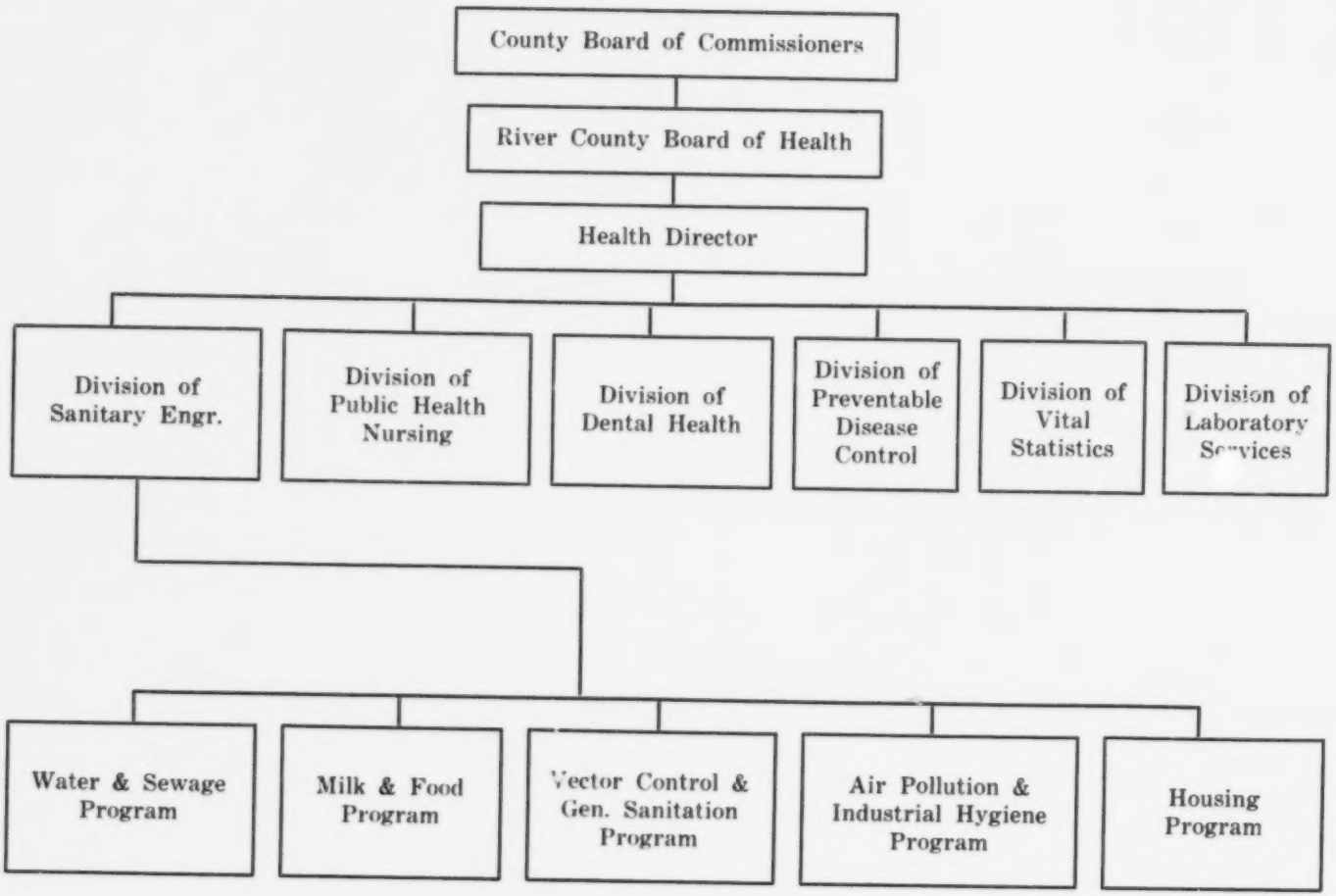
3. Staff:

	Number	Salary Range
Sanitary Engineers	1	540-660/month
Sanitarians	14	400-550/month

4. Health department annual budget $400,000

Source of funds	Amount
County	$350,000
State	$ 50,000

5. Health department organization chart


County Board of Commissioners
River County Board of Health
Health Director
Division of Sanitary Engr.
Division of Public Health Nursing
Division of Dental Health
Division of Preventable Disease Control
Division of Vital Statistics
Division of Laboratory Services
Water & Sewage Program
Milk & Food Program
Vector Control & Gen. Sanitation Program
Air Pollution & Industrial Hygiene Program
Housing Program

Health Department River County

6. Under which conditions is public water required by the Health Department? (Any combination or unspecified conditions should be explained under "other.")

	For Subdivisions		*For Single Homes*
a. In all cases	--		--
b. When available within	--	feet	--
c. For lot sizes smaller than	1	acre	--
d. When wells are unsafe	--		--
e. No regulations	--		--
f. Other	--		--

7. Testing of public water supplies
   a. Agency testing public water supply samples County Health Department
   b. Number, frequency of samples 2 per week
   c. If other than local health agency, does Health Department receive copy of test reports? yes

8. Regulation of on-lot water supplies
   a. Are specific regulations in effect? yes
   b. Are they enforced? yes
   c. Are new wells inspected at time of construction? yes
   d. Are private water supply samples tested? Initially
      1. On request no
      2. Routinely no
   e. Total number of private water supplies 3,000
   f. Number of new supplies installed annually 125

9. Is refuse storage regulated? yes

10. Are enclosed trucks required? yes

11. Refuse disposal (Any open disposal site not covered with earth daily is considered an open dump)
   a. Are there any private or public open dumps in the area? no
   b. Is there a regulation prohibiting open dumps? yes
   c. Does the health department inspect the disposal facilities? yes

Health Department River County

12. Under which conditions are public sewers required by the Health Department? (Any combination or unspecified conditions should be explained under "other.")

	For New Subdivisions		*For Single Homes*
a. In all areas	-		-
b. Where available within	-	feet	-
c. For lot sizes smaller than	1/2	acre	-
d. When septic tanks will not work	yes		yes
e. No regulations	-		-
f. Other	yes *		yes *

* Where sewers adjoin lots

13. Are privately-owned interim sewage treatment plants permitted? yes

a. Are they correlated with a master sewerage plan? yes
How? Plants must be located so future trunk lines will intercept

b. Who is responsible for their maintenance? Builder

c. Has maintenance been generally satisfactory? yes

d. What assurance does the Health Department have of adequate maintenance?
Performance bond is posted

14. Regulation of individual disposal systems (septic tanks, seepage pits or other):

a. What agency passed the regulations? Board of Health

b. Are percolation tests required? yes

Performed by: 1. Above agency yes
2. Registered engineer -
3. Individual -

c. Are soil maps used? yes

d. Are deep soil tests used? yes

e. Average annual number of septic tank complaints 50

f. Number of septic tanks (approx.) 6,000

HEALTH AGENCY OPERATIONS SUMMARY

Health Agency	STAFF					BUDGET	
	Sanitary Engineers		Sanitarians				
	Number	Salary Range	Number	Salary Range	Number of People Served Per Staff Member	Total Dollars	Dollars Per Capita
River County	1	540-660	14	420-550	24,700	400,000	$1.08

HEALTH AGENCY OPERATIONS—EVALUATION GUIDES

HEALTH AGENCY

All parts of the study area should be served by a local health department. Local (municipal or county) health units are usually able to offer more day-to-day attention to local needs than is possible when environmental health services are provided by the State. In general, one large health department can perform more specialized functions than a multiplicity of smaller ones. In any case, all health departments should be large enough to support a full-time professionally trained staff. Economically, therefore, the minimum population of the health jurisdiction should not be less than 35,000 and preferably 50,000 or more.

STAFFING

According to one study made in 1953, an adequate staffing arrangement for modern sanitation program needs should provide at least one sanitary engineer or sanitarian for each 15,000 persons in the health jurisdiction. However, new areas of responsibility (such as increased emphasis on radiological health) and other changing needs may result in different local needs for staffing purposes. (Source: *Organization and Staffing for Full-Time Local Health Services*, December 31, 1953, PHS Publication No. 441)

SALARY

In 1958, the median annual salary for sanitary engineers in communities over 50,000 was $7,313; for sanitarians, it was $5,044. (Source: *Salaries of Local Public Health Workers*, August 1958, PHS Publication No. 656) A 1959 study (*Sanitary Engineering Manpower*, PHS Publication No. 703, 1959) showed the median annual salary of sanitary engineers employed by municipal governments was $7,900; for county, city-county and local district governments, $7,700. No comparable figures are available for the sanitarian category.

It was concluded in *Organization and Staffing for Local Health Services*, January 1, 1958, PHS Publication No. 682, that "public health administrators have recognized for some time that the once recommended $1.50 per capita for providing basic minimum local health services is no longer sufficient to operate a public health program. Current estimates vary, but range between $2.00 and $3.00 per person".

WATER CONNECTION REQUIREMENTS

There should be requirements for connection to public water service to aid in the orderly planning and financing of water service systems. This is discussed in more detail in subsequent guides under Public Water Supply. The health department may find such regulations useful as a means of eliminating or preventing unsatisfactory private water supply installations in cases where public service is or could be made available.

WATER TESTING

A recommended minimum standard suitable for local areas is given in *Public Health Service Drinking Water Standards*.

ON-LOT WATER SUPPLIES

Regulations should be in effect which establish minimum construction standards for private water supplies. Standards should meet State and Public Health Service recommendations. (See *Individual Water Supply Systems*, PHS Publication No. 24.) They should require at least an initial quality sample. The licensing of well drillers is recommended as a means of regulating well construction in the community. Although routine inspection and sampling may be so time consuming as not to be warranted in some areas, the practice is encouraged where possible.

REFUSE ORDINANCES

Regulations or ordinances controlling refuse collection and disposal should be adopted throughout the study area. Suggested ordinances suitable for adoption by local health agencies are given in *"Refuse*

Collection and Disposal for the Small Community" a joint study and report of the U.S. Department of Health, Education, and Welfare, Public Health Service, and the American Public Works Association.

REFUSE STORAGE

Standards for the storage and removal of refuse from individual premises should be enforced by the health department. These standards should include requirements for removal of refuse to prevent nuisance conditions. They should also specify the construction, size, and covering for refuse containers.

REFUSE COLLECTION

Enclosed trucks should be required by the health department to prevent nuisance conditions caused by blowing and scattering of truck contents. The licensing of refuse haulers is recommended to assure the use of proper equipment.

REFUSE DISPOSAL

The use of open dumps should be prohibited by health department regulation. Routine inspection of disposal sites is recommended to assure that proper disposal practices are being used.

SEWER CONNECTION REQUIREMENTS

To bring about the connection of residences with public sewerage systems where such systems are or could be made available, the health department should have regulations governing the conditions under which public sewer connection is mandatory.

INTERIM SEWAGE TREATMENT PLANTS

The health agency should have a definite policy regarding the use of interim sewage treatment plants. These plants are sometimes used to provide service during transitional periods before an area's population density warrants connection to a central treatment facility. Use of interim plants should be based on assurance of continuity in providing adequate maintenance. This can be accomplished by having a local governmental entity assume responsibility for maintenance, by public utility commission licensing of the operation with a service charge arrangement, or by use of a performance bond, with plant operation by a private concern.

The sewer system for such plants should be correlated with the master sewerage plan for the area. This allows eventual integration of the sewer system into a future arterial system with the assurance that sizes, slopes, etc. will conform to later needs without additional expense.

ON-LOT SEWAGE DISPOSAL

1. *Enforcement Agency.* A local enforcement agency should be responsible for regulating on-lot sewage disposal. Separate agencies operating in the same region often have different regulations, with the result that builders and homeowners have no uniform policy for guidance.

2. *Percolation Tests.* Soil percolation tests are recommended as a means of evaluating the ability of the soil to absorb the wastes. Except for areas where soil conditions are known from experience to be totally unsatisfactory for this purpose, regulations should call for such a test.

Testing should be done by trained, unbiased persons and a recommended testing procedure (see *Manual of Septic-Tank Practice*, PHS Publication No. 526) should be followed, as "short cuts" often lead to erroneous results.

3. *Soil Maps.* The use of accurate soil maps is suggested to evaluate soil conditions as an adjunct to the more precise percolation tests. Use can also be made of soil maps to determine the general soil characteristics in an area. These maps are available for most areas from the local soil conservation office of the U. S. Department of Agriculture or from the U. S. Geological Survey.

4. *Deep Soil Tests.* A deep soil test is needed to determine subsurface characteristics, and such a test should be part of the

local regulations. Proper septic tank performance cannot be expected if interference is encountered from a high water table (within 4 feet of the ground surface) or from rock or other impervious strata within 4 feet of the trench bottom.

5. *Septic Tank Failure Rate.* An indication of the septic tank failure rate may be obtained by determining the number of septic tank complaints per year as compared to the total number of septic tank installations. The complaint rate is usually much lower than the actual number of cases where septic tanks do not function properly. A complaint rate of 1 per cent or more usually indicates fairly widespread failures.

HOUSING

Many local agencies have responsibilities in connection with bringing about and maintaining healthful housing condition.

Health departments should see that any conditions contributing to unhealthful housing are recognized so appropriate corrective and preventive steps may be taken. Several guides are available to describe housing needs, including the APHA publication, *Basic Principles of Healthful Housing*, and a number of manuals prepared by the Housing and Home Finance Agency, Washington, D. C.

AIR POLLUTION

Unless this function is assigned to an agency other than the Health Department, some control over air pollution should be a Health Department responsibility. Initially, periodic or routine sampling and surveys of major sources may be sufficient to maintain surveillance on needs in this area. If sampling or surveys indicate a need for regulations and control activities, technical assistance can be obtained from the State health agency or the Public Health Service on request.

C. PLANNING

This section is designed to point out the number and jurisdiction of planning agencies in the study area, not to evaluate the scope or effectiveness of planning operations except as they relate to environmental health factors.

1. Name of planning agency (use one sheet for each agency): City of Riverville

2. Who appoints the board? Mayor

3. Area covered (use map if necessary): City and 1 mile beyond

4. Do health officials consult with the planning agency routinely? yes

5. Who approves subdivision sanitary facilities before platting?

	On-lot Systems	*Public Systems*	*Mandatory Approval**
a. Health Department	yes	-	yes
b. Public Works Department	-	yes	yes

6. Were limitations in establishing residential area lot sizes necessitated by the method of supplying water and disposing sewage in:

   a. the master plan yes

   b. the present zoning yes

* If the health and public works department's approval is required by law before the planning agency can approve the plat, check under mandatory approval. In some cases referral to the health department is required, but a plat can be recorded regardless of whether the health department reports favorably or unfavorably on it. This is not mandatory approval.

PLANNING AGENCY COORDINATION
EVALUATION GUIDE

PLANNING AGENCY

Any growing community should be actively engaged in planning for future land use, including the preparation of a master plan. Effective planning usually requires qualified, full-time planning personnel. However, smaller communities may find that the services of special planning consultants are more suitable than a continuing governmental agency. The planning should be coordinated either by having a single planning agency for the area or by cooperation among planning agencies in the area.

COOPERATION OF PLANNING AND HEALTH AGENCIES

There should be a close working relationship between the health department and the planning agency. Health officials can and should use planning as a tool in their work and planning officials should consult health authorities for specific information.

SUBDIVISION AND ZONING REGULATIONS

Every growing area should have subdivision and zoning regulations. Subdivision regulations are useful to assure provision of sanitation facilities. Zoning standards aid in the development of salubrious neighborhoods and are a strong deterrent to future slum conditions.

SUBDIVISION PLAN APPROVAL

The planning board should refer any plans for on-lot sewage disposal or water supply to the health department for approval. Plans proposing public water or sewers should be reviewed by the agency responsible for those functions.

LOT SIZE

The area and type of soil required to support on-lot sewage disposal and on-lot water supply should be a factor in regulating present lot size requirements and in future planning.

D. PUBLIC SEWERAGE

One of the most useful results of this section is the preparation of the sewerage service map called for under item 3. While such a map may be available locally, experience has shown that they are often not kept current. Also, maps may be in the form of a number of individual maps, each showing only a part of the study area. Current information should be condensed and superimposed on one of the previously prepared area maps, such as shown in the example on page 54. If lateral and submain locations are not shown on available maps, the boundaries of the overall service area should be approximated.

D. PUBLIC SEWERAGE

1. Name of system (use one set of sheets for each system): Town of Bethel

2. What agency operates the system? Dept. of Public Works

3. Map—Show jurisdiction or "franchise area," service area, location of plants, outfalls, pumping stations.

4. Number of homes served: 1,200

5. Percent (homes served/all homes in area): 95%

6. Has a sewerage "master plan" been developed? yes

   a. When? 1955

   b. By whom? Dept. of Public Works

   c. Is it being followed? yes

   d. How often is it up-dated? Yearly

7. Is there a capital budget (long-range spending plan) for major nonrecurring improvements to sewer facilities? yes

8. Is the sewerage system planned for expansion? No

   How?

9. Under what conditions are homes required to connect to existing sewer lines?

	For New Subdivisions	*For Single Homes*
a. In all cases	yes	-
b. Where available within	-	-
c. No regulations	-	-
d. Other	-	yes *

* Where topography permits service

System Town of Bethel

10. What criteria govern the extension of lines?

	Within Corporate Limits	*Outside Corporate Limits*
a. When public funds are available	-	-
b. On petition of homeowners	-	-
c. Master plan schedule	yes	-
d. Request of health department	-	-
e. Requires sewer district formation	yes	-
f. Other	-	-
g. Population density	-	-

(Describe definite requirements)

Not extended beyond city limits

11. Who pays for sewer line extensions across vacant areas?

a. Agency responsible for the public sewerage system ____

b. Developer X

c. Shared ____

(Describe any special rebate methods)

12. Who pays for lines larger than those needed for current use:

a. Agency responsible for the public sewerage system ____

b. Developer ____

c. Shared X

(Describe any special rebate methods)

City pays difference in cost between 10 inch line and any larger size needed according to the master plan.

System Town of Bethel

Items 13 through 17 need not be completed by agencies not operating their own treatment plant.)

13. Design capacity of treatment plant (in m.g.d.) 0.4 m.g.d.

14. Treatment

a. Primary

b. Secondary X

15. a. Immediate receiving water Oak River

b. Drainage basin Oak River

16. Does any sewage other than storm water bypass flow directly into the receiving water without treatment?

No

17. Describe any action taken by a state agency against the system because it was polluting a receiving stream.

None

18. Itemize the residential rate structure (service charges, benefit charges, taxes, tap-in-fees, front foot fees).

Original sewer line cost is paid in 5 equal assessments over a five year period.

Plant operation cost is paid from service charge; based on water use. Sewer cost is one half of menthly water bill. See section on water for rates.

PUBLIC SEWERAGE SUMMARY

NAME	OPERATED BY	Number of Homes Served	Master Plan	Capital Budget	Designed for Expansion	TREATMENT			
						Primary	Secondary	Capacity m.g.d.	Receiving Water
City of Riverville	City	116,000	yes	yes	yes		✓	36.0	Jones Creek *
Town of Bethel	Town	1,200	yes	yes	no		✓	0.4	Oak River
Town of Creston	Town	1,100	yes	yes	yes		✓	0.5	Fork Creek
Town of Higby	Town	360	no	no	no	✓		0.2	Rush River
* Approximately 1,000 homes not served with treatment facilities. Discharge goes directly into Oak River.									

PUBLIC SEWERAGE EVALUATION GUIDES

SERVICE AREA

Service areas should be based on population density and topography. A multiciplicity of small sewage treatment plants indicates a lack of coordinated area planning. The practice of constructing many small plants, each designed to serve only its immediate area, is less desirable and often more expensive than a few large plants designed to serve entire drainage areas. A comparison of the service area map with the map previously prepared for drainage and soil conditions will be helpful in determining (a) most logical locations of treatment facilities and service areas, and (b) areas where public sewerage is most needed due to soil conditions which preclude the proper operations of private septic tank systems.

JURISDICTIONAL AREA

Jurisdictional areas should be related to drainage areas and should reflect anticipated growth patterns.

SEWERAGE MASTER PLAN

A sewerage master plan showing future needs and facilities is necessary in attacking the problem of urban growth. In areas currently without serious problems, such a plan will assist greatly in preventing future problems. Along with the master plan, a capital budget (long-range financial plan) is needed, in which expenditures are allocated for periods of several years. Both the master plan and the capital budget should be related to other community needs.

EXPANSION NEEDS

A sewerage system which allows flexibility to meet changing conditions is desirable. This can be accomplished by designing sewer sizes to handle both present and future needs, and by a treatment plant which will allow expansion at minimum expense. Where economics do not justify large sewer main construction in all areas, temporary pumping stations have been used until population densities warrant permanent truck line installations.

SEWER CONNECTION REQUIREMENTS

When public facilities are available, connection to such a system should be required, since this allows better system planning. A determination is needed for availability, and a defiinite distance should be set. Some areas also use a time factor, allowing one to two years before connection is required. Still another system is that of requiring payment of a front foot benefit charge where a line is available regardless of whether connection is made.

SEWER LINE EXTENSIONS

The community should have a definite policy for determining the method by which service extensions are made. Whatever method is used, it should allow extensions to be made where economic and health factors make this desirable.

The policy should include provision for extension of lines across vacant lots. This requires a decision as to the method of payment or cost sharing. For over-sized lines designed to serve a large drainage area, a common method is for the government agency to pay the difference in cost between a sewer sized only for the immediate development area and the larger size which will be needed ultimately for the total drainage area.

ADEQUACY OF TREATMENT

The community should provide treatment for all sewage. In urban areas, the discharge of untreated sewage into the environment constitutes a definite health hazard. If such conditions exist, or if the present facilities do not provide treatment of all sewage, steps should be taken toward corrective measures for the community.

RATE STRUCTURE

A determination of total sewerage service costs is useful to compare local system costs with each other and with costs in adjacent areas. Average monthly residential sewerage cost is a convenient basis for this comparison. In some communities sewerage costs are paid from a general fund supported by ad valorem taxes and in this case, an estimate of average monthly residential cost should be made.

In other areas sewerage costs are based on water usage. If this is the case, a standard water consumption figure must be assumed and used throughout the study area for comparison purposes. One thousand cubic feet per residence per month (about 75 gallons per person per day) is suggested for this purpose.

AREAS SERVED

To make the following evaluations the sewerage service map is compared with (1) the present population density map, to determine current service needs and (2) the future population density map, to determine these areas which the future will find most in need of sewerage service. In this connection, there is considerable evidence that, within limits, the construction of new sewer systems to serve anticipated growth areas is often "self-insuring"; that is, the presence of adequate public sewerage facilities attracts home builders and home owners alike to the areas so served and in this way stimulates population growth in these areas. By computing the area provided with sewerage service as a percentage of the total area in each density grouping, the percentage of homes served for each of the population groupings may be determined.

Example:

49.6 sq. mi. —total in study area
7.9 " " —total area in "over 5,000 person per sq. mi." density group
6.8 " " —of this 7.9 sq. mi. served by public sewerage service

Therefore: $\frac{100 \times 6.8}{7.9} = 86$ per cent of this density group is served

The following chart relates the economic justification of public sewerage service with various population densities. The chart does not necessarily reflect the justification of public sewerage service from a health standpoint, since this cannot be determined except as a judgment factor.

With this limitation, the chart should serve as a "rule-of-thumb" guide for planning purposes. Local characteristics such as topography and subsoil conditions may alter the criteria, which are based on research results for average soil and topographic conditions.

Population Density	*Equivalent Lot Size*	*Service Economic Justification*
Over 5,000 persons/sq. mi.	Less than ½ acre	Public sewerage is justified
2,500–5,000 " "	½ to 1 acre	Public sewerage is normally justified
1,000–2,500 " "	1 to 2 acres	Public sewerage is not normally justified
Less than 1,000 " "	Over 2 acres	Public sewerage is rarely justified

D. PUBLIC WATER

Data for preparing the map under item 3 can be obtained from the water supply agency or from the records of privately operated utility companies. In some cases, it may be necessary to obtain information from the State Public Utility Commission for this item and for items 11 and 12. (As with the maps for sewerage systems, condensation of data may be necessary to show the information on one base map.)

1. Name of system (use one set of sheets for each system) Town of Creston

2. What agency operates the system? Dept. of Public Works

3. Map. Show jurisdiction or "franchise area" service area, location of plants, source, and pumping stations. (See page 51 for example.)

4. Number of homes served 1,450

5. Percent of homes served 99%

6. Has a water "master plan" been developed? No
   a. When?
   b. By whom?
   c. Is it being followed?
   d. How often is it up-dated?

7. Is there a capital budget (long-range financial plan) for water facilities? No

8. Is the water system planned for expansion? No
   How?

9. Under what condition are homes required to connect to existing water lines?

	For New Subdivisions	*For Single Homes*
a. In all cases	-	-
b. Where available within	-	-
c. No regulations	yes	yes
d. Other	-	-

System Town of Creston

10. What criteria govern the extension of lines?

	Within Corporate Limits	*Outside Corporate Limits*
a. When public funds are available	-	-
b. On petition of homeowners	-	-
c. Master plan schedule	-	-
d. Request of health department	-	-
e. Requires sewer district formation	-	-
f. Other	yes *	yes *
g. Population density	-	-

(Describe definite requirements)

Lines extended if builder pays all costs and capacity is sufficient

11. Who pays for water line extensions across vacant areas?

a. Agency responsible for the public water system

b. Developer Yes

c. Shared

(Describe any special rebate methods)

12. Who pays for lines larger than those needed for current use: (Do not include lines built only for improving pressure or for fireflow purposes)

a. Agency responsible for the public water system

b. Developer Yes

c. Shared

(Describe any special rebate methods)

13. Source of supply Two wells

System Town of Creston

14. Treatment

a. Chlorination Yes

b. Other

15. Present total reliable source supply (m.g.d. at lowest flow)* Unknown

16. Present total reliable plant capacity 2 - 200 g.p.m. pumps (o.5m)

17. Present storage capacity (finished water) 300,000 gallons

18. Is there usually adequate pressure (30 lb. psi) in all parts of the system? Yes

19. Describe any action taken by a state agency against the system because of the quality or quantity of water.

None

20. Itemize the rate structure (service charges, taxes, tap-in fees, front foot fees, benefit charges).

Initial cost paid by home owner or developer

Rates: First 300 cu. ft. --- 45¢ per 100 cu.ft.
Next 400 cu. ft. --- 36¢ per 100 cu.ft.
Next 16,000 cu.ft. --- 30¢ per 100 cu.ft.
(Minimum $1.50/month)

21. What is the community fire underwriting rating? NB 7

* Obtainable from U.S. Weather Bureau or Geological Survey. Note any proposed dams which may affect supply. For wells, estimate the safe yield from past experience.

PUBLIC WATER SUMMARY

Name	Operated by	Number of Homes Served	Treatment					Plant Capacity	Present Total Reliable Source Supply (m.g.d.)	Present Storage Capacity	Adequate Pressure	Monthly Residential Fee	
			Master Plan	Capital Budget	Designed for Expansion	Chlorination	Other					Inside Municipality	Outside Municipality
City of Riverville	Riverville D.P.W.	11,800	✓	✓	✓	✓	✓	40.0	56.0	55.0	✓	2.80	3.50
Town of Bethel	Bethel Water Co.	1,300	✓	✓	✓	✓	✓	0.75	4.30	1.0	✓	2.45	2.45
Town of Waterton	Waterton D.P.W.	110	-	-	-	✓	✓	0.06	18.0	0.1	✓	2.61	2.61
Town of Creston	Creston D.P.W.	1,450	-	-	-	✓	✓	0.5	?	0.5	✓	3.69	3.69
Town of Higby	Higby D.P.W.	400	-	-	-	✓	✓	0.2	3.0	0.2	✓	2.80	2.80
Town of Fairview	Fairview D.P.W. ..	350	*	*	*	*	*			0.25	✓	3.60	3.60

* Purchases from Riverville

SERVICE AREAS

A small number of community water utilities is preferable to a multiplicity of uncoordinated systems. Where practical, interconnection between distribution lines is recommended. A large number of relatively small water companies or municipal departments is often the result of a lack of a coordinated policy for community water resources. Widely different rate systems, insufficient capacity in some areas, and deficient fire protection service can often be traced to these conditions and illustrate the need for an area-wide coordinated plan for water service.

WATER MASTER PLAN

A master plan which shows future needs and facilities in relation to the area's growth and water resources is necessary for effective planning. Such a plan should be developed in connection with a sewerage master plan, and should encompass the long-range watershed needs, storage facilities, and, if appropriate, flood-control plans. Pipe networks, pumping facilities, treated water storage needs, and fire protection demands should also be considered.

Still another factor needed for a good community water program is a long-range financial plan. Both the master plan and capital budget should be related to other community needs.

CONNECTION REQUIREMENTS

Regulations calling for mandatory connection to public water supplies, where public water service is, or could be made available, are recommended for allowing better system planning and financing.

EXTENSION OF SERVICES

The community should have a definite policy for determining the method by which service extensions are made. Where water is provided by a private utility firm, extensions are largely dictated by economic factors. Where the system is publicly operated, there should be clear-cut processes by which the service can be extended without undue "red tape."

Where vacant areas must be crossed, or where the pipe network calls for oversized lines, a policy should be firmly established describing any special financial arrangements for such cases.

WATER QUALITY

The treated water should meet State and Public Health Service quality standards. A recommended minimum standard suitable for States and local areas is given in *Public Health Service Drinking Water Standards.*

WATER QUANTITY

Capacity and storage should be such as to provide quantities adequate for maximum day demands, without signficant loss of pressure. The system should also be capable of meeting fire flow demands. In most cities under 200,000 population, the water required for fire fighting purposes, plus the maximum day consumption, is the governing factor in design. Requirements for fire fighting needs are usually based on standards set by the National Board of Fire Underwriters.

RATE STRUCTURE

Although no emperical figure can be provided as a "reasonable" water rate, the cost of water should be fairly consistent throughout the study area and should be reasonable enough to encourage connection to the public supply. In some communities, water revenues are too low to allow sound fiscal planning for depreciation or anticipated axpansion needs. In other areas, water rates are set high enough to give a surplus sometimes used

for other purposes. A thorough study of the rate structure is desirable to avoid both of the above practices and to provide fiscally sound service rates.

The average monthly residential bill is a convenient means of comparing costs with those in other areas. For comparative purposes, an assumed quantity of 1,000 cubic feet per family per month is suggested (about 75 gallons per capita per day).

Example:

Charges	—first 900 cu. ft. or less per quarter	
	0.45 100 cu. ft.	
Next:	1,200 cu. ft. quarter	
	0.36 100 cu. ft.	
Next:	9,900 cu. ft. quarter	
	0.30 100 cu. ft.	
Cost:	900 @ 0.45 100 —	$ 4.05
	1,200 @ 0.36 100 —	4.32
	900 @ 0.30 100 —	2.70
		$11.07

for 3,000 cu. ft. in 3 months or $3.69 for 1,000 ft.^{3} per month.

AREAS SERVED

Public water supply service should be provided to those areas where service can be justified from health and economic standpoints. In making the following evaluation, the water service map should be compared with present and also future population density maps. The percentage of homes served in each population density group can then be determined.

Population Density			*Equivalent Lot Size*	*Service Economic Justification*
Over 2,500	persons	sq. mi.	Less than 1 acre	Public water supply is justified
1,000–2,500	"	"	1 to 2 acres	Public water supply is normally justified.
500–1,000	"	"	2 to 4 acres	Public water supply is not normally justified.
Less than 500	"	"	Over 4 acres	Public water supply is rarely justified.

This chart is based on average cost of public vs. private water supplies as compiled from various journals and reports. The policies of State public utility commissions regarding capital investment-financial return were also taken into account.

Local characteristics may indicate an adjustment to these criteria is needed in some cases, but they are suitable for average conditions as a "rule-of-thumb" guide in determining economic justification of public water service.

E. REFUSE COLLECTION AND DISPOSAL

1. Area covered by collection system (use one set of sheets for each system) Town of Higby

2. What agency operates the collection sys em?
   a. Name Frank Sanitation Service
   b. Competitive private companies dealing directly with homeowner?
      If so, how many companies?
      Are licenses required?
   c. Franchised private companies dealing directly with homeowner? Yes
      If so, franchised by whom? Town of Higby
      Does the franchise provide exclusive contract? Yes
   d. Franchised private companies on contract with the local government?
   e. Collection operated by local government?

3. Map—Show jurisdiction or "franchise area," service area, location of disposal sites. (See page 56 for example.)

4. Number of homes served 250

5. Percent of homes served 40%

6. Has a refuse master plan been developed covering
   a. Collection 74
   b. Future disposal sites 74
   c. When?
   d. By whom?
   e. Is it being followed?
   f. How often is it up-dated?

7. Is there a capital budget for refuse collection and disposal facilities? 74
   (Long-range financial plan)

System Town of Higby

8. What criteria govern the extension of services?
   a. When public funds are available —
   b. On petition of homeowners —
   c. Master plan schedule —
   d. Request of health department —
   e. Requires refuse district formation —
   f. Other Yes
   g. Population density —
   (Describe definite requirements)
   Franchised operator free to collect wherever profitable

9. Does collection include
   a. Rubbish Yes
   b. Garbage Yes

10. Are enclosed trucks used? Yes

11. Number of pickups per week
   a. Summer one
   b. Winter one each 2 weeks

12. Itemize the rate structure for collection (taxes, service charge). Use the monthly single-family residence fee as the basis.*
   $1.50 per month

13. Are homeowners required to pay for public service (whether or not service is used)? No

* If the service is supported by general tax funds, divide the expenditure for collection by the number of homes served.

System Town of Hugly

Items 14 through 17 should be completed for each disposal system operated by this agency.

14. What disposal method is used?

a. Open dump

b. Sanitary Landfill Yes

c. Incineration Capacity

d. Other

15. What agency operates the disposal facility? Higby Board of Public Works

16. What is the distance from the estimated center of population to the disposal site? 2½ miles

17. What charges are made for using the facility? None

REFUSE SUMMARY

Name	Operated by	Number of homes served	FINANCED by: Master plan	FINANCED by: Capital budget	FINANCED by: Taxes	FINANCED by: Monthly Residential Service Charge	COLLECTION: Include Trash	COLLECTION: Include Garbage	COLLECTION: Include Enclosed trucks	COLLECTION: Pick ups per week Summer	COLLECTION: Pick ups per week Winter	DISPOSAL: Type	DISPOSAL: Operated by	DISPOSAL: Distance from Population Center
City of Chinook	City	100,000	✓	✓	–	✓	✓	✓	✓	2	1	Incinerator	City	3 mi
City of Kenmille	City	14,000	✓	✓	–	✓	✓	✓	✓	2	1	San. fill	City	3 mi
Town of Bethel	Town	900	–	–	–	✓	✓	✓	✓	1	1	"	"	Kenville	1½ mi
Town of Bayby	Private operator	280	–	–	–	✓	✓	✓	✓	1	1½	"	"	Town	2½ mi

COLLECTION AGENCY

A governmentally regulated system of refuse collection is preferable to the practice of having individual competitive haulers deal directly with the homeowner. This regulation can be achieved by a governmentally operated system, by having private companies contract with the local government, or by having private companies franchised by the local government.

REFUSE MASTER PLAN

A master plan based on a thorough engineering analysis for the collection and disposal of refuse is vital in rapidly growing communities. The alternative is almost insurmountable future problems. Even the best planned refuse collection and disposal system will be one of the costliest services provided by a municipality. A poorly planned system is certain to place a continuous, undue burden on financial resources and create ill-will in the community.

Of prime economic importance is the proper location of disposal facilities in relation to future population concentrations. Sites for these facilities must be designated and acquired either through zoning, leasing, purchase, or condemnation to avoid future hostile public reaction as well as to avoid expensive future acquisition costs.

There should be close coordination of the refuse collection and disposal and future transportation plans to develop the most economic hauling system. Coordination with future recreational area plans may be mutually beneficial through improvement of low land by filling with refuse or incinerator residue.

EXTENSION OF SERVICE

A definite policy should be established for extending service areas. In contrast to water and sewerage services which require considerable long-range planning of physical needs, refuse collection lends itself to somewhat more flexible program planning.

COLLECTION

Collection should include both rubbish and garbage. Where only one type of refuse is collected routinely, experience has shown that the other type is often neglected. Closed body trucks are desirable for preventing material from scattering. Compaction trucks are advantageous under some circumstances because of larger capacity per unit volume. If garbage is collected, it should be done at least twice weekly during the warmer summer months. Weekly collection may suffice during winter months in many parts of the country.

DATA STRUCTURE

Refuse service charges throughout the area should be determined. A comparison of service charges in the study area, as related to length of haul, may indicate potential savings through relocation of disposal sites, or rerouting of collection trucks. Cost of service is largely determined by collection time, and every effort should be made to route the collection services most efficiently in view of changing needs.

All homeowners within the area served by a publicly operated collection system should be required to pay whether they choose to receive the service or not.

DISPOSAL FACILITIES

Because of nuisance conditions and health hazards, open dumps are not acceptable. Other disposal methods such as the sanitary landfill or incinerator are satisfactory when properly operated. The disposal site should be as near as possible to the area it serves, preferably not more than 10 miles away.

DISPOSAL COSTS

Operating costs for sanitary landfills currently range from $1.00 to $1.50 per ton of refuse. Incinerator costs are considerably higher, but may be offset by shorter haul distances. Cost of incineration usually ranges from $2.00 to $5.00 per ton of refuse. Where charges are made for the use of the disposal facilities, a weight basis is more equitable than a volume basis. Charges should reflect both operating and replacement costs.

AREAS SERVED

In the same manner as previously described in evaluating water and sewerage services, the refuse service area map should be compared with the population density maps to determine coverage in the various density groupings. The chart assumes average topography and reasonable length of haul, and is based on cost research using various numbers of collection stops per mile. As a "rule-of-thumb" guide, they can be used for determining the economic justifications of service under average conditions.

Population Density	*Equivalent Lot Size*	*Service Economic Justification*
Over 2,500 persons/sq. mi.	Less than 1 acre	Service is justified
1,000–2,500 " "	1 to 2 acres	Service is normally justified
500–1,000 " "	2 to 4 acres	Service is not normally justified
Less than 500 " "	Over 4 acres	Service is rarely justified

F. AIR POLLUTION

In many cases, the steps involved in recognizing and evaluating an air pollution problem in an area will be the recognition of some effect (reduced visibility, damage to vegetation, soiling, or in extreme cases, effects to persons or animals); assessment of these effects; measurements of air pollution concentrations; and evaluation of sources through inventories and measurement.

Agency Riverville Metropolitan Air Pollution Control District

1. Effects*

   a. Damage to structures Minor

   b. Damage to crops None

   c. Increasing sickness and absenteeism Minor

   d. Lowering property values, aesthetically, and through actual damage and soiling Significant

   e. Affecting transportation through lowered visibility Significant

2. Regulations

   a. Has air pollution legislation been adopted? Yes

   If "yes", describe and give date of adoption Adopted Jan. 8, 1960, authorizes a comprehensive program for the prevention and abatement of air pollution and established a technical advisory board.

   b. Have air pollution regulations been established? Yes

   c. Describe area covered by this agency's regulations and show on base map Entire county

   d. Is there an advisory board for air pollution activity? Yes

   Duties (technical, legislative, other) Advisory. The RMAPCD administrator re: proposed regulations and other technical developments

* Indicate effects as, significant, minor or none.

Agency **Riverville Metropolitan Air Pollution Control District**

3. Control program

   a. Is authorization required for those new installations capable of causing air pollution? **No**

   b. Are new installations inspected prior to operation? **No**

   c. Average number of permits issued monthly **No** denied monthly **No**

   d. Have the principal sources of air pollution been determined? **No**
   If so, indicate number and type of sources and show the major sources on area map.

   e. Has a long-range air pollution abatement plan been developed? **No**

   By whom?

   When?

   f. Average monthly complaint rate **5**

4. Measurement methods

   a. Is an air monitoring program in operation? **Yes** . If so, show location of sampling stations on area map.

   b. Does sampling program include particulate matter? **Yes** Gasses? **Yes**

   c. Does the control agency have laboratory facilities? **No**

   Meteorological equipment? **Yes**

5. Location controls

   Map—Show location of present air pollution sources and industrially zoned areas. (See page 57 for example.)

   a. Does zoning include areas for industry of the type likely to produce air pollution? **Yes**
   If so, show such industrially zoned areas on map.

   b. Is meteorological data available and used in community planning? **No** * Zoning? **No** *

   How?

   * Data now being developed

AIR POLLUTION SUMMARY

AGENCY NAME	EFFECTS NOTED					Regulations established	Authorization required for new installations	Monthly complaint rate	Long-range plan	Sampling program conducted
	Damage to structures	Damage to crops	Sickness-absenteeism	Lowered property values	Reduced visability					
R.M.A.P.C.D.	Minor	None	Minor	Significant	Significant	Yes	No	5	Yes	Yes

AIR POLLUTION EVALUATION GUIDES

REGULATIONS

Air pollution control regulations should be established if atmospheric contaminants result in significant deleterious effects in the community. As a first step in the development of a control program, many communities form an advisory committee or board.

Such boards usually consist of civic, industry and government leaders, and should study the nature, extent, and effects of air pollution in the community. The board can then determine what the best interests of the community are, and develop a control plan in light of the problem and the community resources.

Advisory boards may continue to function as a permanent group after the control program has become operative. In such cases, the board would advise the control agency on continuing program needs.

CONTROL PROGRAM

In addition to the investigation of complaints, many communities use a permit system in their control program. This provides a technique under which prior approval of plans for new construction or alterations is required, and approval is given only if the controls to be provided are adequate to meet requirements on the emission of air pollutants.

Other areas use a procedure in which registration is required for all sources of regular or anticipated emissions above some minimum size. Either method requires that a determination be made of the principal sources of air pollution. This information is also useful in preparing maps and other data for use in a long-range prevention and/or abatement program.

MEASUREMENT METHODS

Monitoring programs are useful both in determining the extent of the problem and also in measuring progress. Sampling should include particulate matter and gases, and there should be access to adequate sampling equipment and laboratory facilities.

LOCATION CONTROLS

Development of a sound, long-range program of prevention and/or correction is greatly aided by good zoning regulations. Correlation of meterorological data, present and future industrial growth patterns, and community expansion characteristics is desirable in relating air pollution control with community planning and zoning. Comparison of the industrial zoning map with the population density maps can assist in visualizing desirable location controls.

NEWER AIR CONTAMINANTS

Communities may feel that an ordinance covering smoke abatement provides an adequate air pollution control device; however, advancing technology has added many new considerations in the realm of air contamination and in most instances, upgrading of outmoded smoke abatement ordinance is long overdue. The charts shown on page 38-39 list many types of air pollutants, effects resulting from each type, usual sources of these pollutants, the primary causes, points of emission into the atmosphere, suggested methods of control, recommended enforcement measures and the physical characteristics of the contaminant. From this chart a community can estimate the present potential and problems to be expected if a comprehensive survey is conducted.

TYPE	EFFECT	SOURCE	CAUSE	POINT OF EMISSION	METHOD OF CONTROL	ENFORCE-MENT MEASURES	COM-PONENT
FLY ASH (grit)	soiling, fallout	industrial heating, incinerators, etc.	combustion of fuel and wastes	stacks and chimneys	mechanical & electrical devices	ordinances & regulations	solid
SMOKE	choking, fallout	"	"	"	" and more efficient combustion	"	solid & gas
SOOT & CINDERS	soiling, fallout	"	"	"	"	"	solid
OXIDES OF CARBON	toxic	combustion processes	combustion of fuel	vehicular exhaust, stacks & chimneys	chemical devices & more efficient combustion	"	gas
OXIDES OF NITROGEN	irritation, smog	combustion processes, chemical plants	combustion of fuel, chemical manufacturers	vehicular exhaust, stacks & chimneys	absorption, catalytic decomp. & reduction	"	gas
OXIDES OF SULPHUR	acid, corrosion irritation	combustion processes, chemical plants, metallurgical plants	combustion of fuel, metallurgical operations, sulfuric acid production	stacks & chimneys	mechanical and chemical devices	"	gas
HYDROCARBONS	smog, (some are carcenogenic)	combustion processes, autos, buses, trucks and planes	incomplete combustion of fuel	vehicular exhaust	blowby & exhaust devices	"	gas & aerosols
OTHER ORGANIC	varied	vehicles, industrial chemical plants	combustion, chemical processes	stacks, etc.	mechanical, chemical & electrical devices	"	gas

TYPE	EFFECT	SOURCE	CAUSE	POINT OF EMISSION	METHOD OF CONTROL	ENFORCE-MENT MEASURES	COM-PONENT
AGRICULTURAL SPRAYS	toxic irritation	agricultural spraying	spray drift	spraying apparatus	good judgement	ordinances & regulations	solid & gas
VOLCANIC ASH	soiling, toxic	volcanoes	natural	mouth of volcano	none	none	solid & gas
DUST	soiling	arid areas	natural	arid area	agricultural practices	none	solid
POLLEN	irritation, discomfort	plants	natural	plant	weed control	regulations	solid
RADIOLOGICAL CONTAMINANTS	toxic	nuclear energy sources	X-ray equipment, testing, fallout	X-ray equipment nuclear energy uses	accepted practices	"	radiation
SMOG	irritation discomfort	vehicles exhaust	chemical reaction of exhaust with sunlight	atmosphere	blowby & exhaust devices	"	gas
ODORS	noxious discomfort	vehicles, industry, incinerators dumps, etc.	decomposition, incomplete combustion, industrial processes, etc.	vehicle, industry, incinerator, dump, etc.	masking, counteraction, process control & design	"	gas

G. HOUSING

This section is to determine the efficiency of housing services and programs within the study area. A more detailed evaluation of housing conditions and programs is described in "The ACTION Urban Renewal Evaluator" available from the American Council to Improve Our Neighborhoods, 2 West 46th Street, New York 36, New York.

Agency River County Health Department

1. Which of the following regulations have been enacted?

Regulation or Code		*Agency Responsible*
Housing*	Yes	County Health Department
Building	Yes	County D.P.W. and Riverville D.P.W.
Plumbing and heating	Yes	County D.P.W. and Riverville D.P.W.
Electrical	Yes	County D.P.W. and Riverville D.P.W.
Zoning	Yes	Riverville, Bethel, Creston Zoning Boards
Rooming house	Yes	County Health Department
Tourist and trailer court	Yes	Motels: State Health Department Trailers: County Health Department

2. Which of the following services or programs are provided?

   a. Housing code enforcement?

      (1) On complaints only ____

      (2) On a selected area basis ____

      (3) On both ____ Yes

   b. Systematic evaluation of housing and neighborhood quality? Yes

      What evaluation method is used? APHA

   c. Community organization or planned education program for housing and neighborhood improvement? Yes

      By which agency, committee, or group? County Health Department

   d. Coordination of housing and neighborhood improvement programs? No

      How? ____

* Means housing code similar to APHA Proposed Housing Ordinance and does not include enforcement of sanitary code or other general regulations in residential areas.

Agency River County Health Department

e. Review of plans for conversions (creation of new dwelling units within existing dwellings? Yes

By which agency? County and Riverville Building Inspection

f. Home accident prevention program? No

By which agency?

g. Other special services or programs for control of housing quality? None

3. Housing quality.* (Show location of sub-standard areas on map. See page 75 for example.)

a. Number of residential structures? 115,000

b. Number of dwelling units? 116,300

c. Number of substandard dwelling units? 5,400

d. Approximate number of new dwelling units constructed per year? 11,000

4. Urban renewal project(s) None

Type of project(s)	Size	
(Clearance, rehabilitation)	Acres	No. of Dwelling Units

5. Is there a public housing authority? No If so, how many housing units are provided?

* If not available otherwise, information on the number of dwelling units and "dilapidated" dwelling units may be obtained from Bureau of the Census publications, *Census of Housing—Nonfarm Housing Characteristics* and *Census of Housing—General Characteristics.*

HOUSING AGENCY SUMMARY

AGENCY NAME	PROGRAM INCLUDES						DWELLING UNITS		
	Code enforcement	Systematic evaluation	Accident prevention	Urban renewal	Plan review for conversions	Public housing	Total Number	Estimated Number Substandard	Constructed Annually
River County Health Dept.	Yes	Yes	-	-	Yes *	-	116,300	5,400	11,000

* County + Riverville Building Inspection

H. HOUSING EVALUATION GUIDES

The housing guides are not designed to evaluate the quality of housing in the area. The guides will assist in revealing any major gaps in the mechanism designed to control housing conditions. Precise measures of quality require detailed study using the APHA appraisal technique or some similar device.

REGULATIONS

The only way to prevent slums is to insure that all of the study area has a comprehensive set of regulations and programs for the control of both new and existing dwellings. Anything less than complete coverage leaves a loophole for the development of slums either in the core city, the suburbs, or on what may now be open land.

There is no ideal structure for a comprehensive housing program, and it usually evolves from experience. Housing, building, plumbing and heating, electrical, and zoning codes are all considered essential. Rooming house, tourist court, trailer court, and nursing home regulations are not essential unless the background data indicate a sizable number in the area.

HOUSING PROGRAMS

Housing programs should utilize a systematic evaluation of housing and neighborhood quality. The APHA Housing Quality Appraisal Technique is perhaps the most widely accepted method, but locally developed methods have been used. The main criterion is that some objective technique is employed on a systematic basis. This will serve to identify the location and nature of deterioration and permit the charting of a quality rating for a neighborhood. (Where housing evaluation studies have been conducted, the location of sub-standard dwelling units on a map is a useful part of the report.) Preventive or remedial action can then be taken at the right time.

Good housing in a good neighborhood is not enough for achieving permanent slum prevention. Programs should be developed to create neighborhood organizations dedicated to housing improvement and maintenance, and should be properly coordinated by some officially designated agency or committee.

A strong program of prevention requires review of all plans for housing conversions or alterations.

In housing rehabilitation there are many opportunities for home accident prevention. This must depend more upon education and technical advice than upon code specifications.

CONSTRUCTION PROJECTS

Many communities are finding that urban renewal projects are worthwhile for certain deteriorated areas. Before entering upon an urban renewal program, evaluation of housing conditions is needed.

Certain groups within the community may require low-cost housing. Where adequate housing facilities for this group are not otherwise available, public housing may be needed.

Some recommendations usually lend themselves to estimates of timing or preliminary cost figures and these may either be included in the basic report or left for later supplementary reports, particularly if lengthy analysis or outside consultant service is needed.

CHAPTER III
USING THE DATA

DEVELOPING CONCLUSIONS AND RECOMMENDATIONS

After completing the review and evaluation of data as described in Chapter II, a more critical consideration of the resultant tentative conclusions can now be made.

This step usually consists of two phases; first, condensing, re-wording and summarizing recommendations and second, establishing some system of priority, based on community need, financial capability, and consideration of local factors which might affect the implementation of the recommendations.

In the communities which have applied the guide processes, some typical conclusions included:

(a) suggestions for improved co-ordination between departments (such as health and planning)
(b) the creation of new divisions in the health agency to be responsible for new or unfilled program needs.
(c) ordinances or regulations relating to various health and public works services
(d) the creation of various types of sanitary district authorities
(e) extensions for water and sewer services into new areas
(f) new or improved subdivision regulations
(g) State enabling legislation needs
(h) recomemndation for such items as frequency of refuse collection
Recommendations for:
(i) better co-ordination or consolidation of city and county health activities
(j) detailed long-range facility planning
(k) detailed engineering or economic studies of special community services beyond the scope of these studies
(l) appointment of new commissions or committees to handle special problems.

While not intended to cover all normal community findings, this list nevertheless gives some indication of the direction taken by some study groups.

Some communities have been successful in obtaining widespread public support by preparing speakers' kits complete with graphic aids, sets of pertinent facts, reasoning used by the study group, conclusions, and answers to most-asked questions.

Volunteer speakers from the study group are then asked to present this material at approximate group meetings throughout the community.

For these recommendations susceptible to public decision, the surest way to guarantee action on a community problem on which fact finding and discussion are completed is to place the issue on the ballot at a general or special election. This procedure might apply to approval of bond issues for public improvements, for changes in governmental forms or jurisdictions, or for creation of certain service districts.

Other recommendations may call for actions susceptible to administrative decision, such as setting up subdivision regulations, passage of a new oridnance or creating an inter-government coordinating committee. Before public discussion is necessary or desirable, the appropriate government officials, appointed or elected, should be informed of the study groups feelings, and the desired action may be obtained without need for further action simply because of the soundness of the proposal and the fact that groups of community stature have discussed

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and favor it. If public hearings are held, as might be the case for passage of an ordinance, spokesmen from the study group should be prepared to speak in favor of the legislation.

PREPARING THE REPORT

The final study report format will be dependent on the type of study recommendations and the sponsoring agency.

In general, if a citizens group sponsors the studies, the report will be directed to the appropriate governing officials in the area. If one or more departments of government conduct the studies, the report may be directed either to the administrative head of government or to the community as a whole as a means of generating public support.

Regardless of the formal sponsoring group, the Health Department will have a leading role in these studies, since environmental health is the primary responsibility of this agency.

The local Health Officer normally occupies a position of considerable prestige in the community and for this reason as well as because of the need for technical health consultation services, these studies require active participation by the Health Agency. State Department of Health assistance is also desirable, particularly if recommendations involve health operations at the State level of government. Sometimes the State Department of Health may wish to co-sponsor the final report.

Planning agency support is also essential, since report recommendations will often have a bearing on overall community plans and can provide a useful portion of the comprehensive physical planning operations. Public Works departments and other interested agencies should also be brought in on data collection, evaluation and report preparation phases of the studies.

Reports should contain a statement as to the reason for the study, the final recommendations, a summary of the supporting data showing the reasoning behind the recommendations, maps, and charts for illustration of situations difficult to describe, and the necessary action steps. A typical report form is shown on page 48.

When materials and data are being prepared for the report, it should be kept in mind that much of this information will be useful in a form suitable for showing at conferences and discussion meetings. For example, the area map will necessarily be prepared on a large scale (small size) for the report, but the same information should be prepared in a size suitable for group showing, in one or two copies. Many of the individual maps, such as water service and population densities, are more effectively shown by overlays superimposed on the basic area map. Reproduction costs do not usually allow this for reports produced in volume, but such overlays are extremely useful for group showing to council meetings, civic associations, etc.

PUTTING RECOMMENDATIONS INTO ACTION

Unless the study results in recommendations applicable only to internal governmental administration, some degree of citizen support and participation will be needed.

This calls for organized public discussion and can be based on meetings organized by the individual groups making up the main study group. Such meetings should begin by an introduction of the facts and presentation of the analysis by responsible persons. Graphic aids are very helpful here. Participants should have the opportunity to ask questions and discuss the facts, rather than the subject in general.

FOLLOW-UP

After all the above steps are completed and the study has been finished, some method for follow-up and periodic up-dating of plans is necessary. Provision for this has been

handled in many ways. For very large communities a permanent citizens' advisory group (sometimes with a full-time director or staff) has been useful in working routinely with planning and other official agencies. Where this expense is not justified or possible, the study group may wish to appoint a continuing follow-up committee for periodic consultation with government agencies and re-activation of the study group if future needs warrant additional studies.

Official planning agencies, where they exist and are adequately staffed, usually constitute the best opportunity for liaison and will be responsible for both short and long-range planning. Attendance at meetings of the planning commission or arranging for minutes of planning commission meetings to be furnished may be helpful in keeping up with changing conditions.

Where there is no planning agency, creation of such a unit should be an objective of the study group in most growing communities. However, careful consideration should be given to the most preferable jurisdiction. County or even regional planning may be more advantageous than a planning agency concerned only with problems of a particular municipality.

A regional planning association, even though it may have no specific power or authority, often serves as a useful means of providing informal correlation among its individual members who consist of a representative from each planning agency within the region. Another advantage of a regional association is that it provides a forum for considering broad, long-range goals of an entire area and often can benefit by coordination of regional goals with state planning activities where the state has a planning department.

Regardless of the method used, the interest developed through citizen participation and organization should be maintained and some definite plan should be determined for continued utilization of organized effort for maintaining a balanced, healthful community environment.

APPENDIX

TYPICAL REPORT FORM AND MAPS

SUGGESTED FORMAT FOR ENVIRONMENTAL HEALTH SURVEY REPORT

LETTER OF TRANSMITTAL

This usually will be directed to the Board of Health or to the executive or political leadership of the study area. If the recommendations from the survey cover broad administrative as well as technical items and, therefore, will require action by diverse groups, it may be desirable to omit specific designation and substitute a general preface in place of a letter of transmittal. The latter procedure is also useful where a non-official agency, such as a civic group, conducts the study.

TABLE OF CONTENTS

INTRODUCTION

This should include the reasons for and the objectives of the survey and report. All participating agencies should be recognized in the introduction.

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

GENERAL AREA INFORMATION

Under this heading the study area should be defined and described. Pertinent data on area development, characteristics and population (both present and projected) can be given here. If there are a number of component governmental units contained within the total study area, these should be described, with particular reference to health or health-related functions conducted by each unit.

ECONOMIC BACKGROUND

This optional section may be of considerable importance in some areas but less useful in others. If any recommendations call for large capital expenditures, enough economic data should be included to show that such recommendations are reasonable in view of fiscal capacity. Such items as tax rates, present indebtedness, debt limitations and capital budget data may be pertinent, depending on the recommendations in the report.

COMMUNITY SERVICES

A. Planning

1. The number, extent and responsibility of all planning agencies in the study area should be given with the current status of the comprehensive or "master" plans as they relate to environmental health (zoning, subdivision or other regulations).
2. Needs, conclusions and recommendations should be described and listed.

B. Public Health Administration

1. The number, extent and responsibility of all public health agencies in the study area should be given, including agency organiaztion, financial data and personnel data.
2. Needs, conclusions and recommendations should be described and listed.

*C. General Sanitation Services

*D. Public Water Services

*E. Public Sewerage Services

*F. Refuse Collection and Disposal Services

*G. Air Pollution Control Services

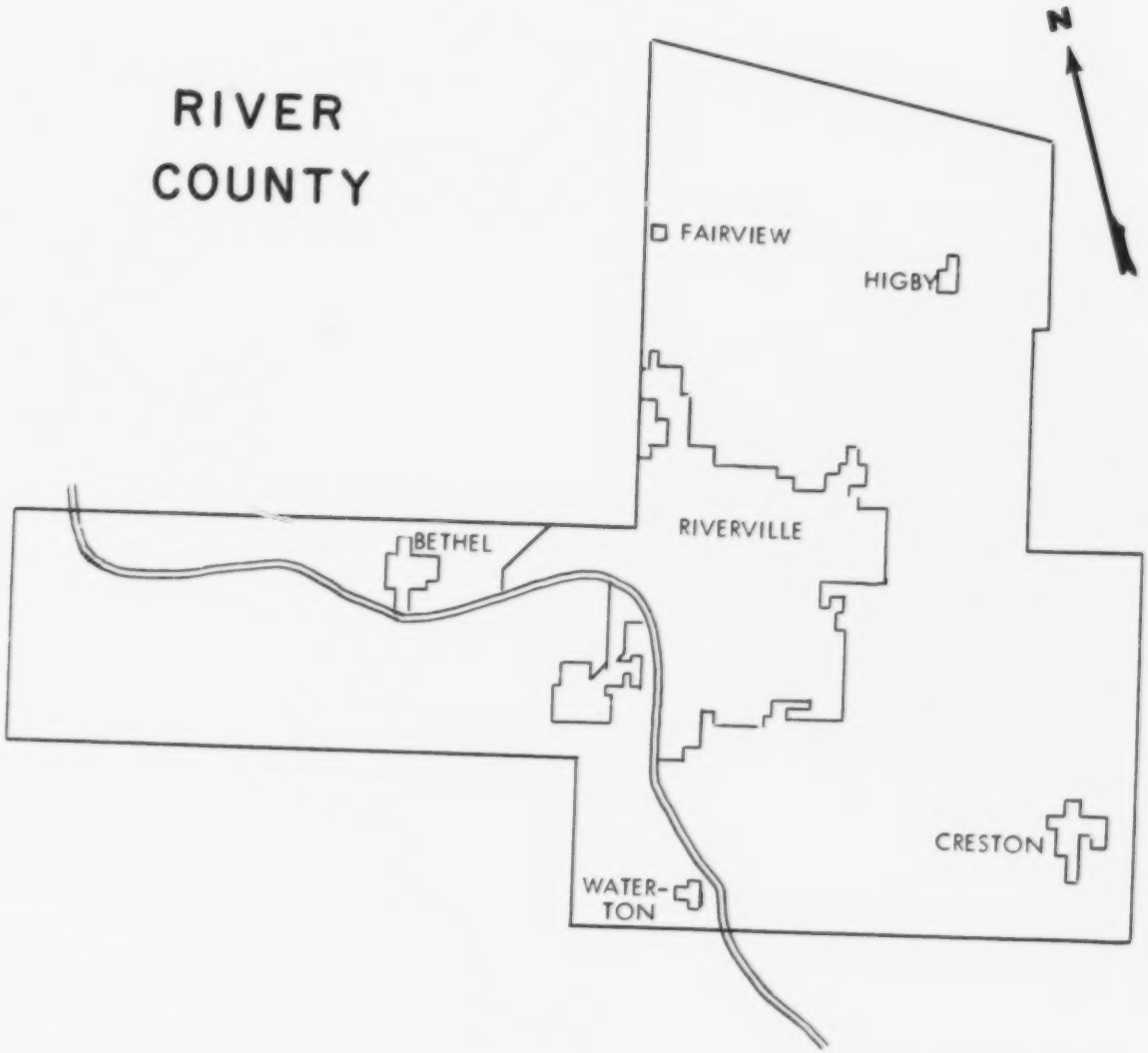
*H. Housing Services

*Under each of the above service descriptions, the nature and extent of current community programs should be listed. The ability of current activity levels to meet both present and future needs should be explained. Where appropriate, service charges should be listed. Any present or projected needs should be described and conclusions and recommendations should be given.

IMPLEMENTATION PROGRAM

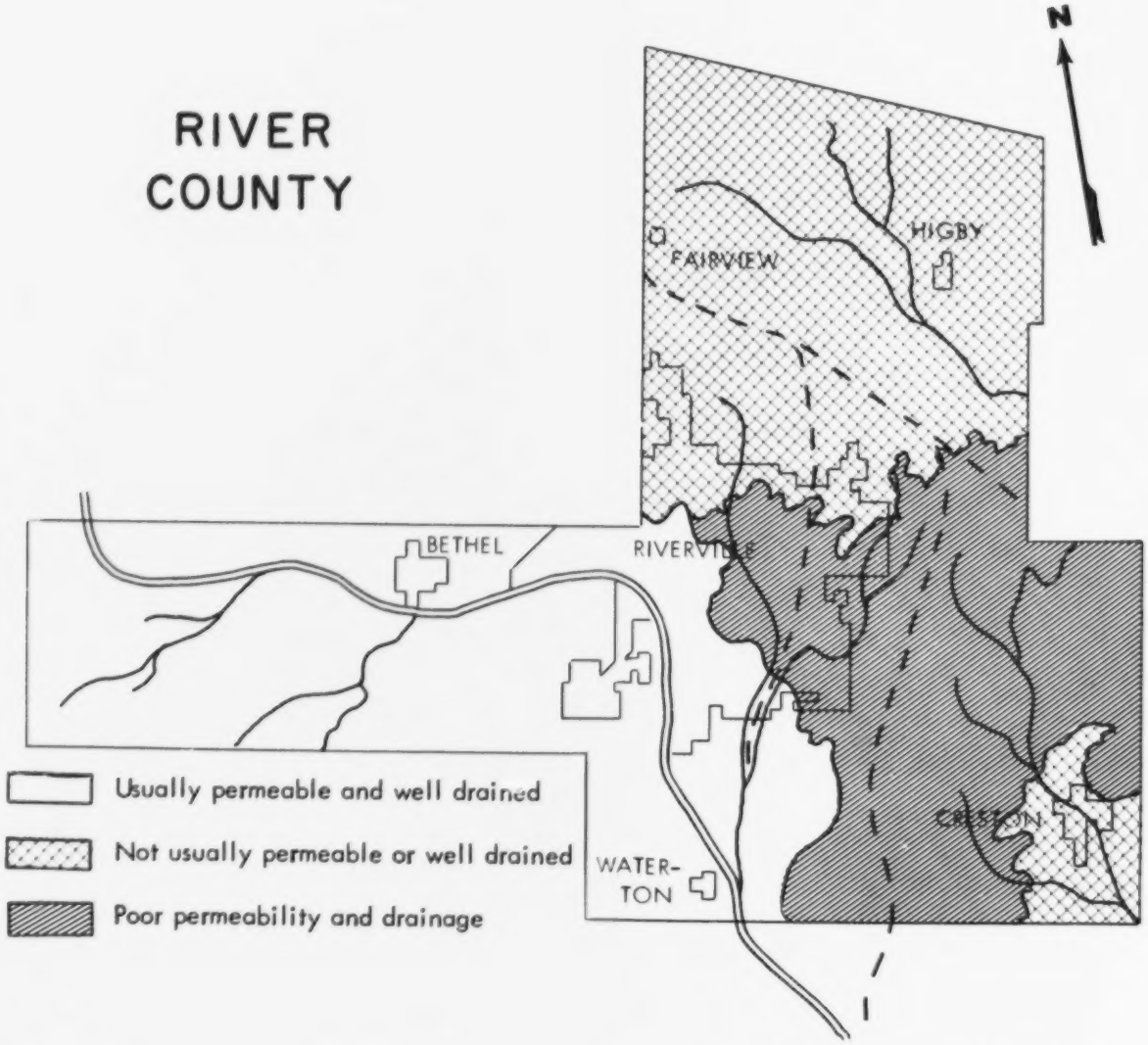
This section should describe plans for carrying out the recommendations. They may include such methods as public discussion as a prelude to elections (bond issues), hearings or petitions bringing needs to the attention of government officials, detailed and intensive studies of particular facets, plans for periodic up-dating of plans, or other appropriate to the particular community needs and situation.

AREA MAP



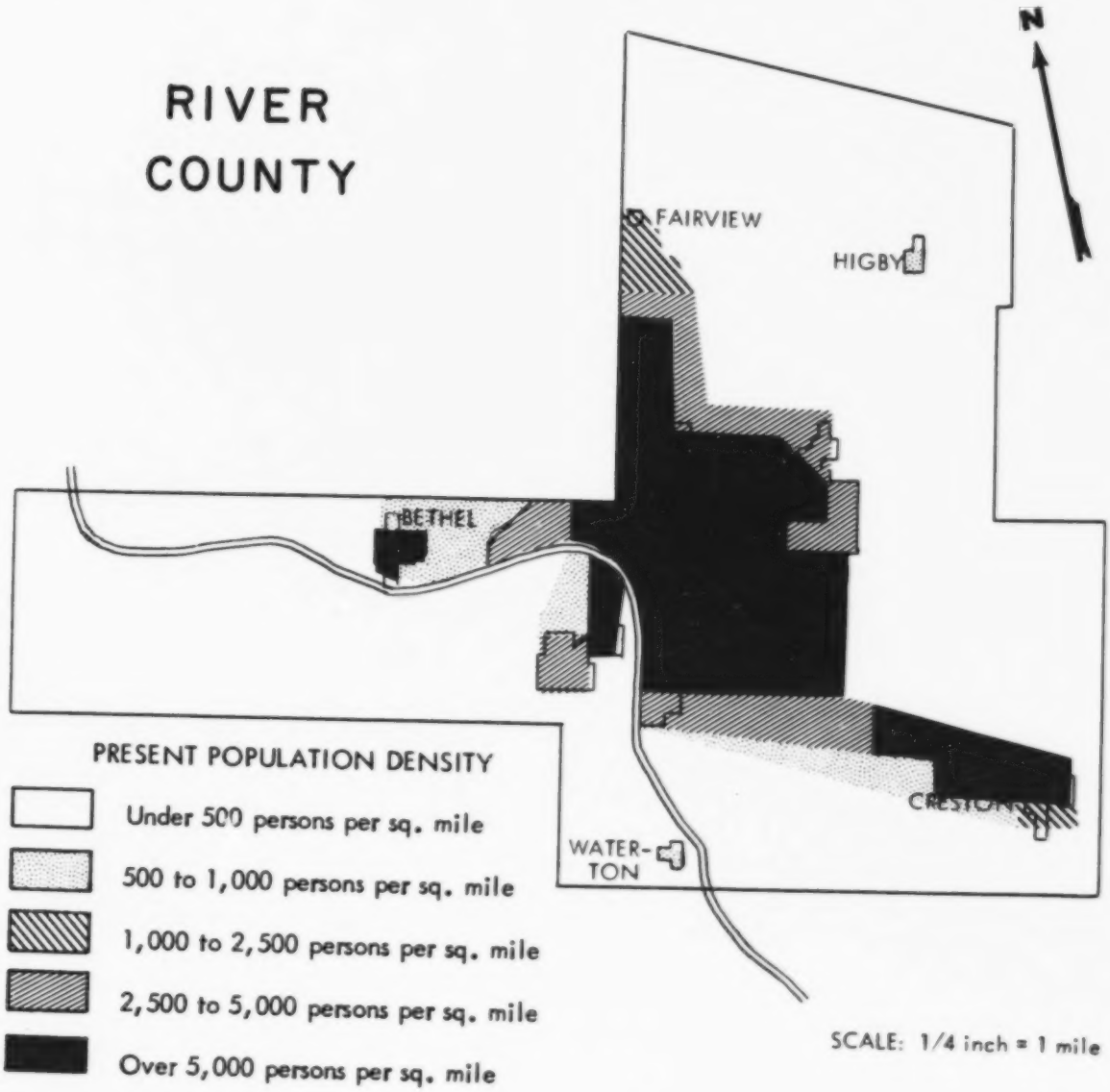
SCALE: 1/4 inch = 1 mile

DRAINAGE AND SOIL MAP

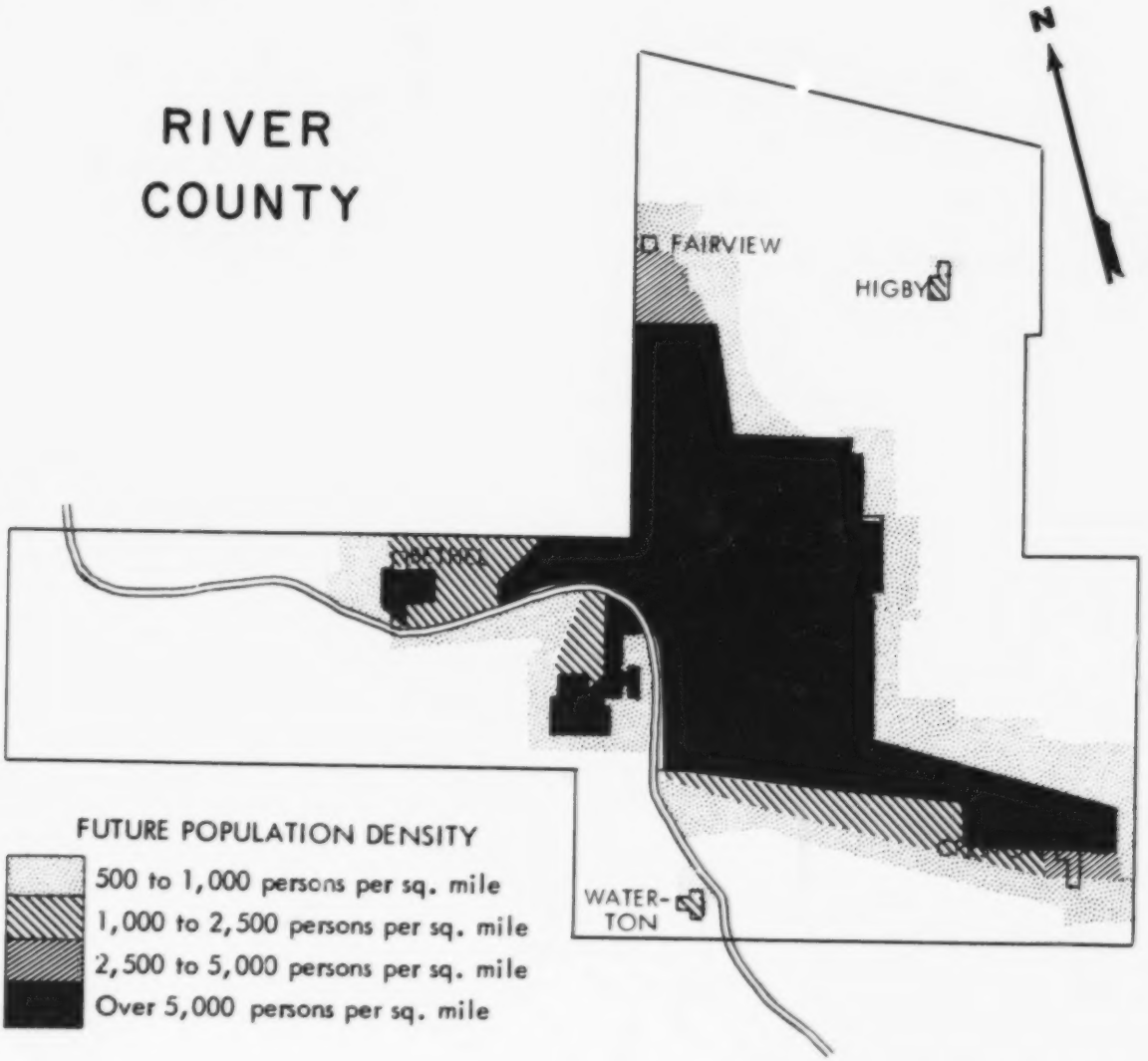


SCALE: 1/4 inch = 1 Mile

PRESENT POPULATION DENSITY MAP

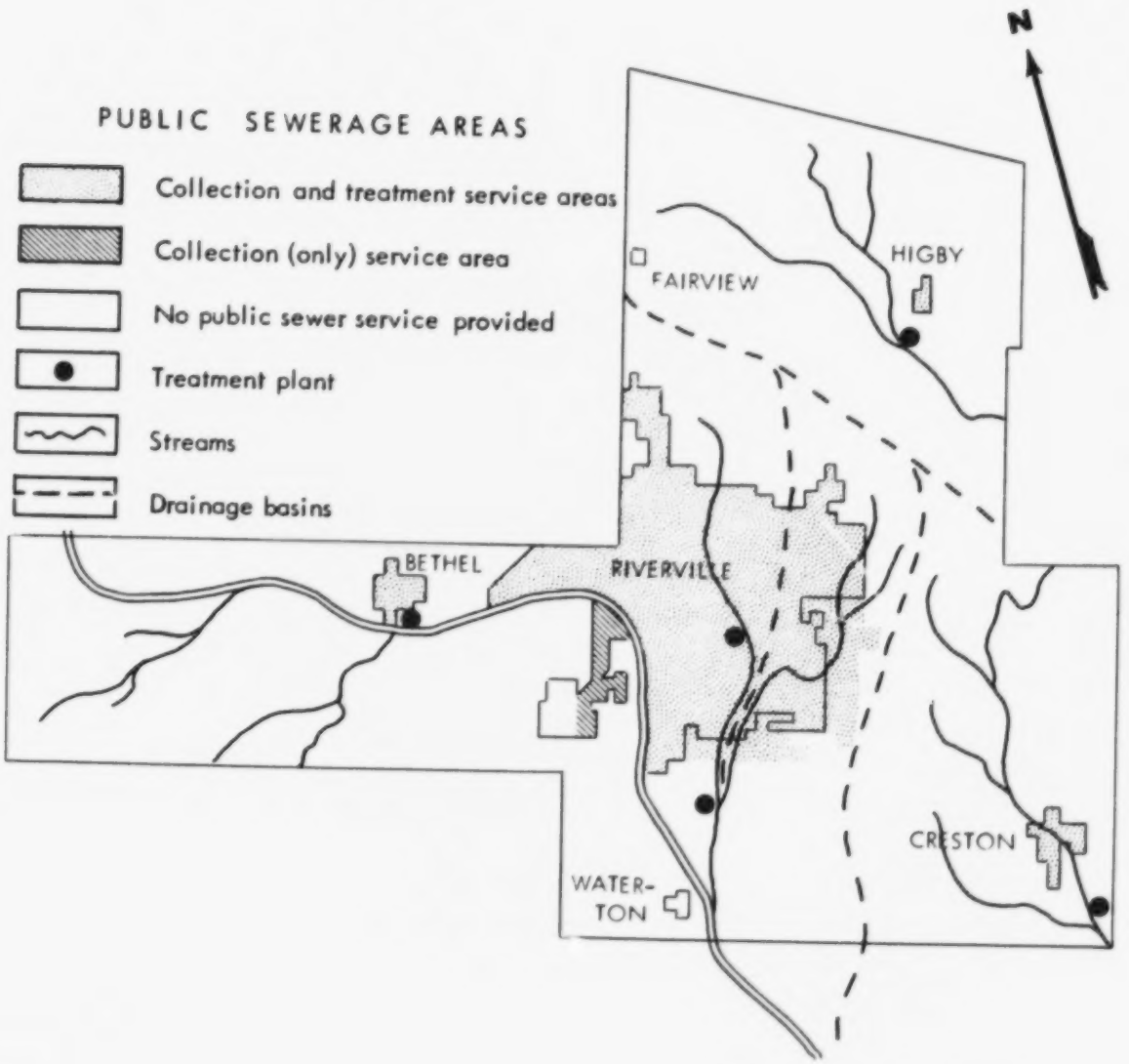


FUTURE POPULATION DENSITY MAP



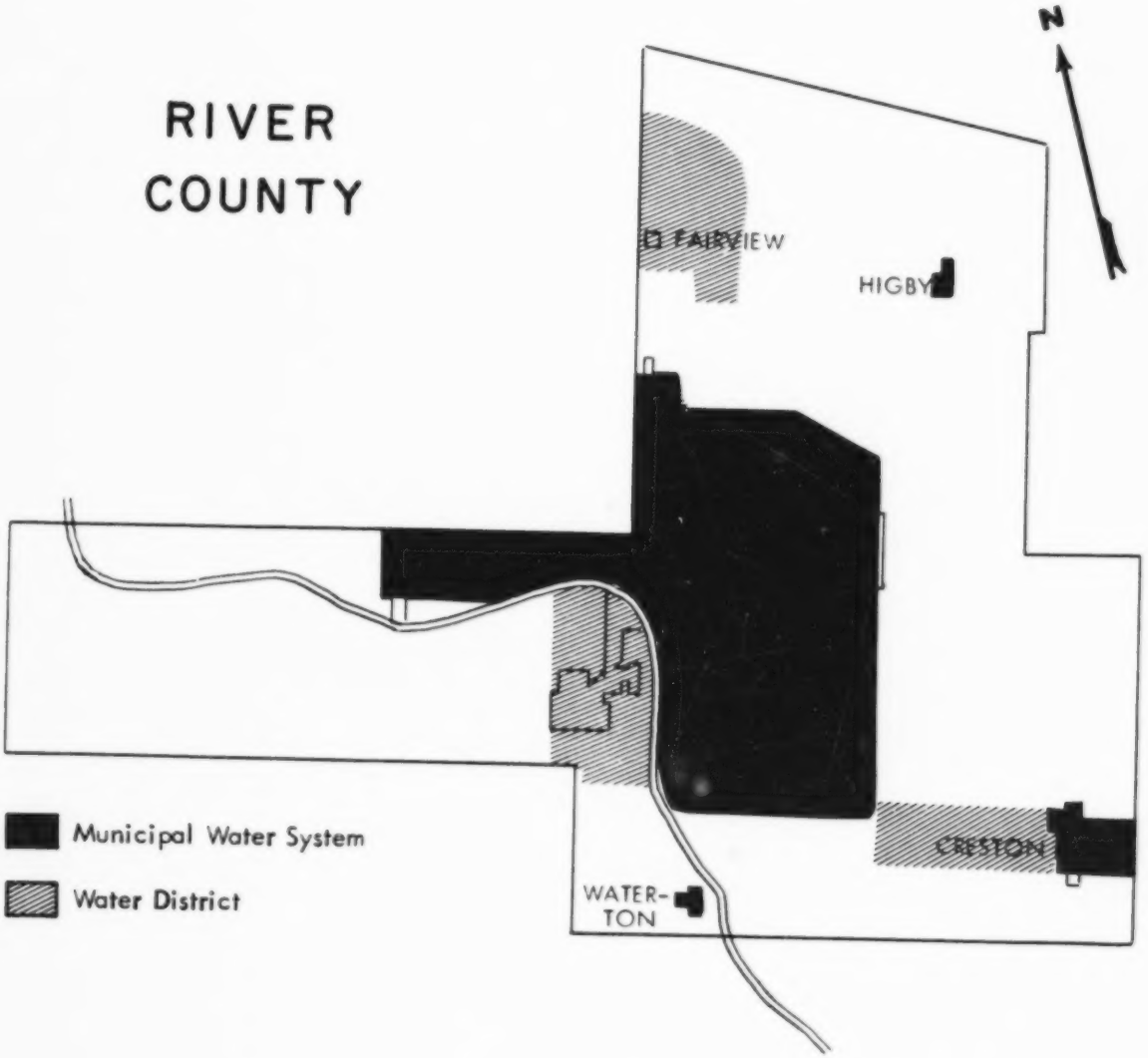
SCALE: 1/4 inch = 1 mile

SEWER SERVICE MAP



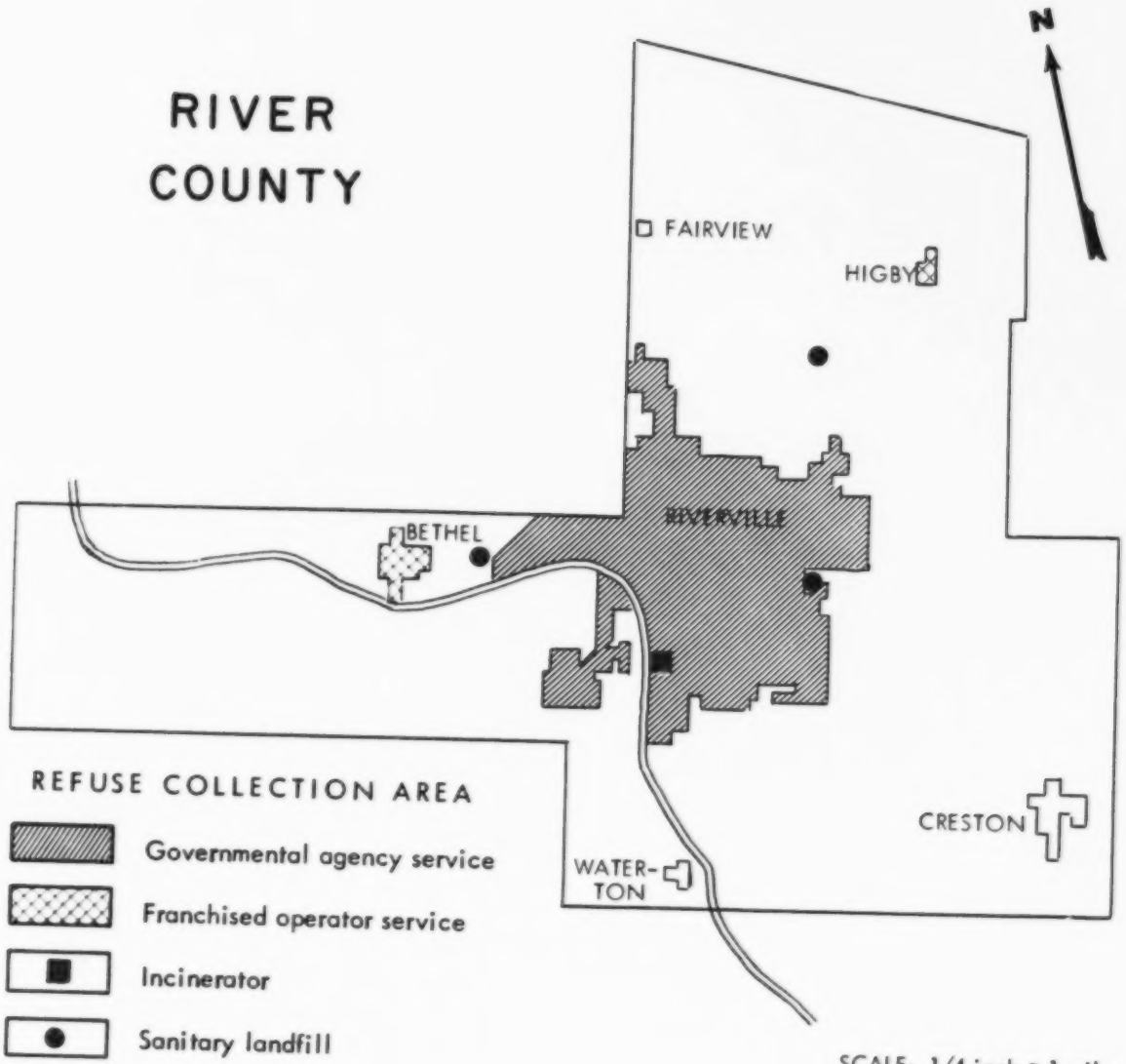
SCALE: 1/4 inch = 1 Mile

WATER SERVICE MAP

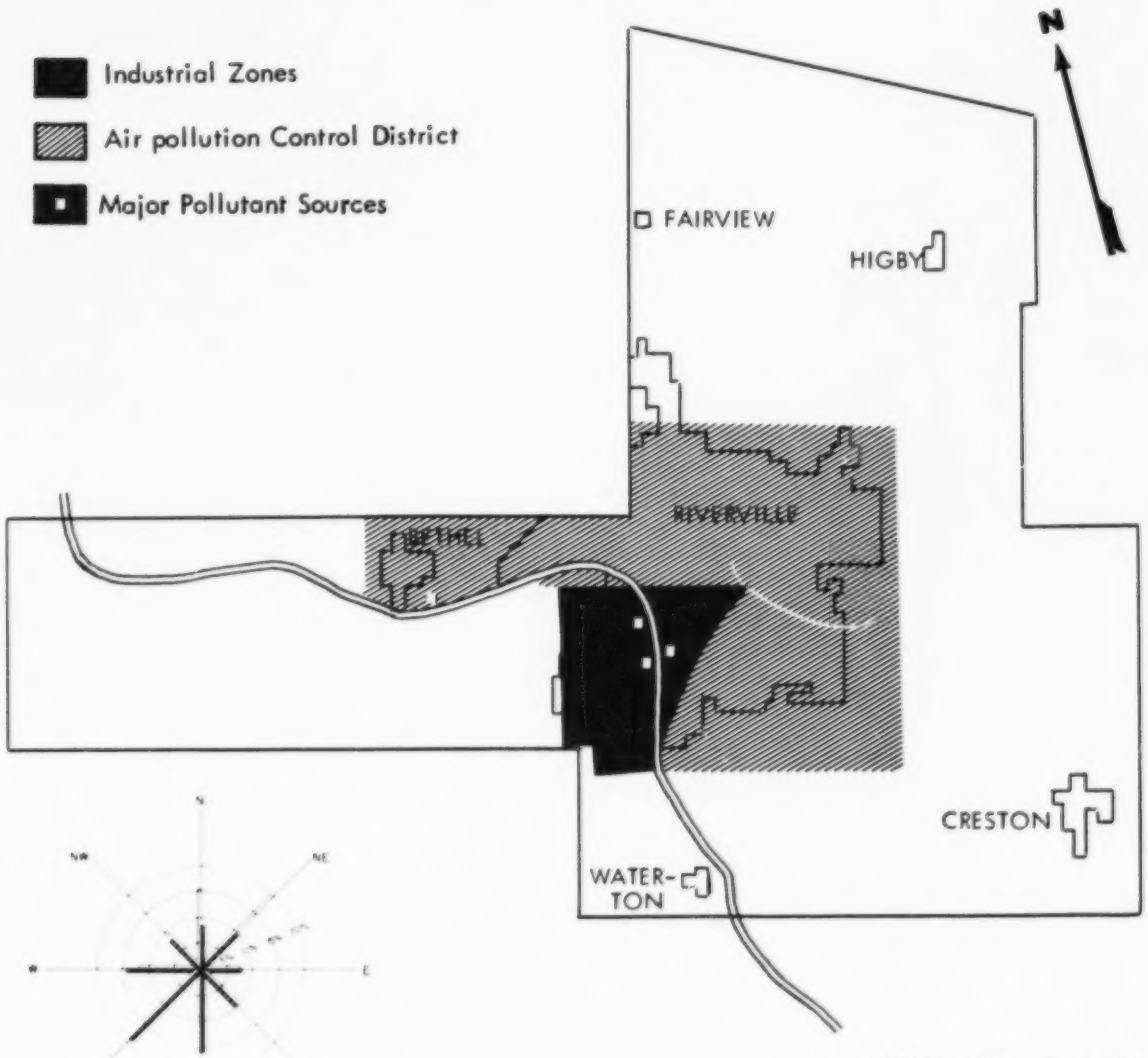


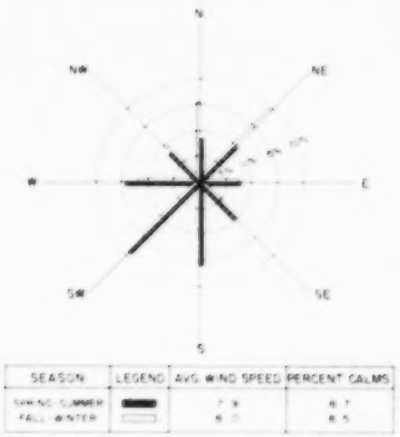
SCALE: 1/4 inch = 1 mile

REFUSE MAP


RIVER
COUNTY
N
FAIRVIEW
HIGBY
BETHEL
RIVERVILLE
CRESTON
WATER-
TON
REFUSE COLLECTION AREA
Governmental agency service
Franchised operator service
Incinerator
Sanitary landfill
SCALE: 1/4 inch = 1 mile

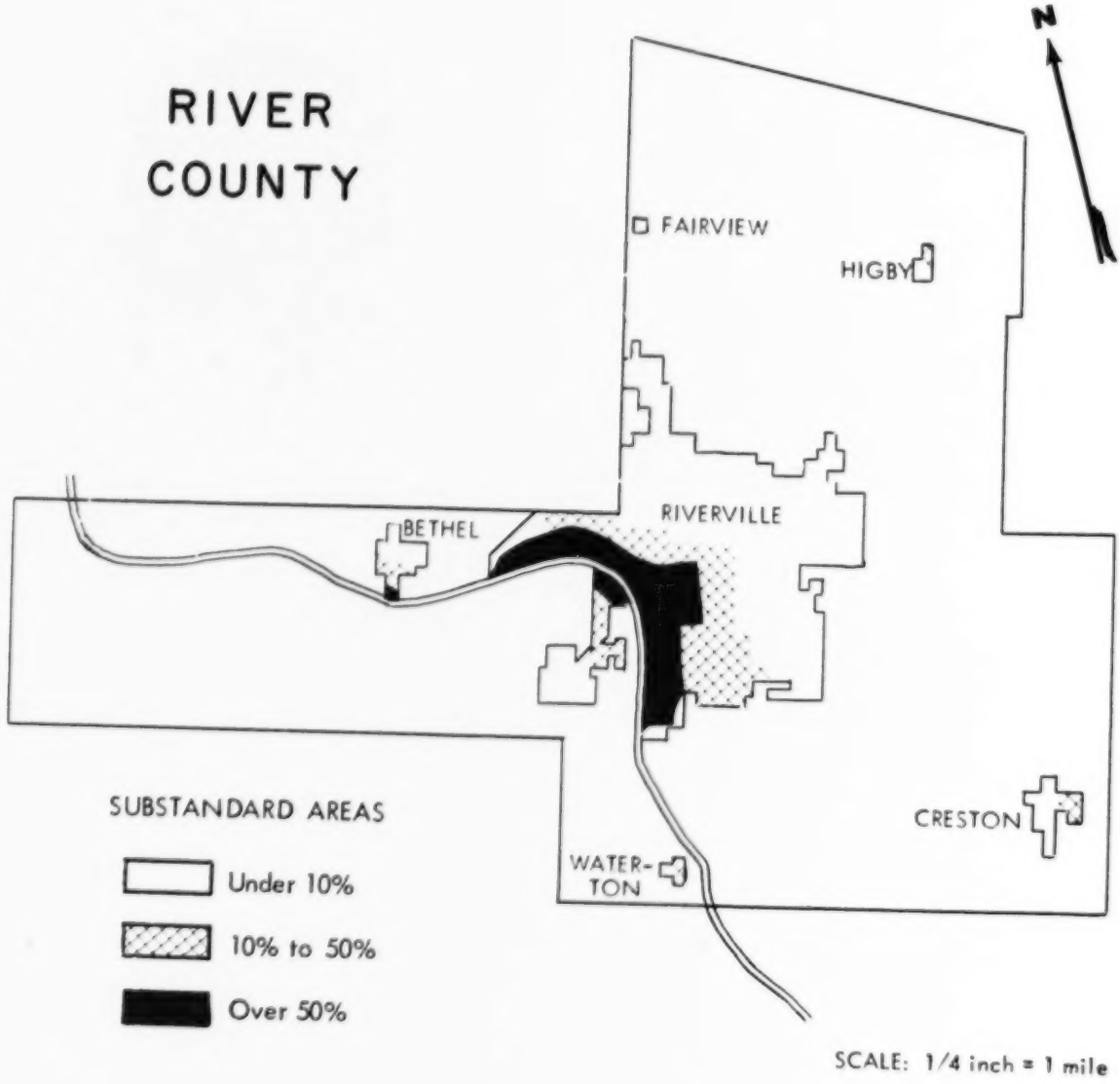
AIR POLLUTION MAP





SEASON	LEGEND	AVG. WIND SPEED	PERCENT CALMS
SPRING-SUMMER		7.9	8.7
FALL-WINTER		6.0	8.5

HOUSING MAP


RIVER
COUNTY
N
FAIRVIEW
HIGBY
BETHEL
RIVERVILLE
CRESTON
WATER-
TON
SUBSTANDARD AREAS
Under 10%
10% to 50%
Over 50%
SCALE: 1/4 inch = 1 mile

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